FLIGHT

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The Croydon Tragedy

WE wish to offer our deepest sympathy to the Air France company, as well as to the relatives of the victims, on the terrible tragedy which has happened at Croydon. As the daily papers have told everyone, the newspaper machine from Croydon for Paris took off about 5 a.m. on May 31 in foggy weather and one of its wings hit the wireless beacon mast which stood almost directly in the line of the take-off. The machine crashed between two houses and the pilot, Capt. Raymond Defives, and the wireless operator, M. Roger L'Huillier, were killed.

For months past our Croydon correspondent has been drawing attention to the danger caused by the position of this mast. He has asked whether we wanted a fatal crash at our very doors before this mast was moved or lowered. The wisdom of his warning has now been most terribly justified. On the aerodrome there is a white line to guide pilots when taking off in conditions of bad visibility, and this mast was not at a safe distance out of the direction of this line. Protests had been made to the proper department of the Air Ministry by companies which make regular use of Croydon aerodrome, but they had produced no result. So long ago as last January the Air Ministry authorities called a meeting of the parties concerned to discuss the results of the working of this wireless beacon, and at the meeting the question of the danger which it caused was raised. A resolution was passed, calling either for its removal to another situation or else that it should be shortened to the height of the neighbouring houses. No action has been taken on this resolution, and now, as a result of this inaction, a French aeroplane has been destroyed and two valuable lives have been lost. The tragedy is a disgrace to the airport of the capital city of the British Empire, and to those who boasted that the terminal aerodrome of London was a model of what an airport ought to be.

Of course there were reasons why the beacon was placed where it was, and of course there were reasons why it was not promptly moved or lowered when the attention of the authorities was called to the danger. We are not concerned with those reasons. In organised flying on air routes there is one supreme rule, and that is "Safety First." No sort or number of reasons concerning expense or technical difficulties have any weight at all when opposed to the question of safety to life. We do not suppose or suggest that the delay in taking action on the resolution passed last January was due to mere dilatoriness, with which all Government offices are popularly supposed to be badly infected. That files pass slowly through the official channels of communication is true enough, but the Air Ministry is no dormitory for lethargic bureaucrats, and action can be taken very promptly when important issues are at stake. In this case the most important issue in civil flying was at stake, namely the lives of those who fly. We take it for granted that there was some reason for the failure to take action, but, as we said before, no reason was or could be adequate. The warning had been given, and the warning was well justified. A very heavy responsibility rests upon those who should have acted upon that warning and who failed to act.

Fighters or Bombers?

A RUMOUR is afloat, which the Air Ministry will neither confirm nor deny, that some of the squadrons of the Auxiliary Air Force are to exchange their "Hart" day-bombers for "Demon" two-seater fighters. One can rather understand the reluctance of the Air Ministry to open their hearts to the public if the matter is actually under consideration because the

two-seater fighter is itself still in the nature of an experiment. So far the experiment has showed sufficient promise for the number of regular squadrons so equipped to be increased from one to two. It is generally expected, however, that a class of aeroplane will be thoroughly tried out by the regulars before it is given to non-regular units. Technically the change would not be a great one, for the chief difference technically between the "Hart" and the "Demon" is in the engine. The former has a normal "Kestrel" and the latter a supercharged "Kestrel." The equipment of the two types of course differs, but a pilot who can fly one would not find any difficulty in flying the other.

Tactically, however, the change would be of no small importance. For one thing, there would be a certain effect on the Auxiliary squadrons themselves. Despite the similarity between the "Hart" and the "Demon," much greater precision in handling a fast machine is required of a fighter pilot from what is demanded of the pilot of a bomber. His whole frame of mind must be different. Hitherto it has been the general opinion that only the continuous, incessant practice which is impossible outside a regular squadron would fit a man to handle fighters with good effect. This opinion may have been modified by the extraordinarily high standard which all the Auxiliary squadrons have shown themselves able to attain. Their keenness is such that in their spare time they put in a goodly number of flying hours, and so perhaps have convinced the authorities that they would be able to handle fighters as well as they have handled bombers.

It is just possible, too, that the Auxiliary squadrons would gain in popular estimation if they were able to call themselves fighters. The proceedings at Geneva have, quite unjustifiably, made the word bomber rather unpopular. Thoughtless propagandists have associated the word with poison gas and baby-killing. Actually bomber aeroplanes are only the artillery of the air, and as the Royal Regiment of Artillery carries no stigma, there is no reason at all why such should attach to bomber squadrons of the Royal Air Force. Certainly there is no lack of applications for commissions or for enlistment in the Auxiliary Air Force, and so its popularity could hardly be increased. Still, perhaps some parents might feel happier if their son were a pilot in a fighter squadron.

In general, Geneva has found it impracticable to distinguish between a weapon of offence and one of defence. The fighter aeroplane is one case where no confusion is possible. Strategically it can only be used for defence. It has not the range or the carrying capacity to be used for invasion. Defence, not aggression, is the air problem of the United Kingdom. Gen. Dénain, the French Air Minister, stated the other day that "in Great Britain aviation was wholly directed to the defence of the country," and that despite our possession of some bomber squadrons. If our proportion of fighter squadrons is to be increased, we shall consider the move a wise one.

FAST FIGHTERS FOR PORTUGAL : One of a batch of Hawker "Furies" (R.R. "Kestrel") which have been purchased by the Portuguese Government. (FLIGHT *Photo.*) 14255

The Outlook

A Running Commentary on Air Topics

England—Australia

CRITICISMS and misunderstandings there were bound to be, but the International race to Australia is likely to be one of the biggest events in aviation history. From small beginnings the event has grown into one of staggering importance. There are well over sixty entries, and many of these are machines which have been specially designed for the race, with almost fabulously high cruising speeds and exceptional range. Freaks, perhaps, in some cases, but freaks that would be capable of transformation into extremely useful mail or high-speed passenger types. At least one of the thirteen or so British entries will stand as good a chance as anything—in the Speed Race—for, it is rumoured, this machine has a cruising speed in the region of 230 m.p.h.

Before every event of this nature, moans are inevitably heard. The Chairman of the Publicity Committee in Melbourne, for instance, remarked that " . . . the race has given us more trouble and anxiety than it is worth . . . it has aroused envy, jealousy, and dissension between the nations. . ." Whatever may be the truth, there can be no doubt that the trouble and anxiety will be more than repaid. The rule relating to airworthiness, too, has been misunderstood. After all, the regulations were drawn up in Melbourne, and Sir MacPherson Robertson himself insisted on some standard of safety.

Incidentally, the regulations stipulated a mass start, but this will obviously be impossible, and the present idea is that the machines should be sent off at half-minute intervals. With the fastest machines in the world on the line, " zero hour " at Hatfield on the twentieth of October will be a moment in a million.

Straws

THE appearance of three new " feeder line " types is just another indication of the way the wind is blowing. All of them have very much higher top speeds than we have been accustomed to expect in this country and one of them should almost touch the " mystic two hundred " at ground level. It is significant, also, that two are low-wing monoplanes with retractable undercarriages. This long-awaited and much-advertised " air age " appears to be almost here.

Third Party

THE first step towards an international understanding on certain aspects of aviation insurance was taken on Monday when a conference was arranged. The problems are considerable. Not only have property owners to be adequately protected, but the insurance rates must not be allowed to become prohibitive, and yet some understanding must be reached if air touring is to become as popular as it should be. Lord Wakefield, at the dinner following, explained that the insurance companies did not wish to see rules and regulations placed as obstacles in the way of international travel.

Prospective Ownership

THERE are any number of keen amateur pilots and any number of people with enough money to buy light aeroplanes—yet, judging from statistics, the list of privately-owned aeroplanes has remained virtually unchanged during the past few years. The explanation is simple, and rests largely on " facilities." Given more aerodromes, or, alternatively, a machine that would be independent of aerodromes, and there would be little to prevent the figures from soaring skywards year by year in the future.

Stalling

IT is more than extraordinary that, when scientists can discover the exact composition of distant stars, an aeroplane's stall should still remain so mysterious. After so able a worker as Prof. Melvill Jones had delivered his lecture before the R.Ae.S., the one outstanding impression was that we really know very little of the phenomena which have caused, directly or indirectly, the deaths of so many good pilots. There are machines that can be held up in a complete stall without evincing any curious tendencies, and there are machines that flick immediately into a spin—and no one appears to be able to make a reliable forecast one way or the other.

Perhaps it is as well that, when the stick is held right back, one cannot actually see the flow of the air. If every machine's wings were covered with tufts of wool, like those used for Prof. Jones's experiments, and if the pilot could watch them " running " like mice leaving a sinking ship, then there would not be half as many climbing turns made on low-powered aeroplanes!

Manners and Common Sense

THE flying meeting season is again with us, and pilots will be visiting aerodromes, sometimes when there is a large crowd to watch their arrival. We do hope that they will remember to observe local or " special occasion " rules. For example, at Brooklands last Saturday the red square ground signal was laid out, signifying that normal rules were suspended during the display and that pilots would have to observe special ones given from the control tower. But during the afternoon at least three visitors landed during a flying event, and yet another took off and gave a display on his own without first obtaining permission; when doing so he actually flew across the main enclosure as if to make a right-handed circuit, so that he was flying towards other pilots who were coming in to land. This sort of thing is not only bad manners, but is productive of dangerous circumstances for which there is no excuse. Pilots must learn to be considerate of other people, to realise that their aeroplane is not the only one using the air, and that rules are not made for fun. So far we have been moderately free from unnecessary restrictions in the air, but if this kind of thoughtlessness continues we shall certainly have more rules and regulations imposed upon us—and then it will be too late to grouse about it.

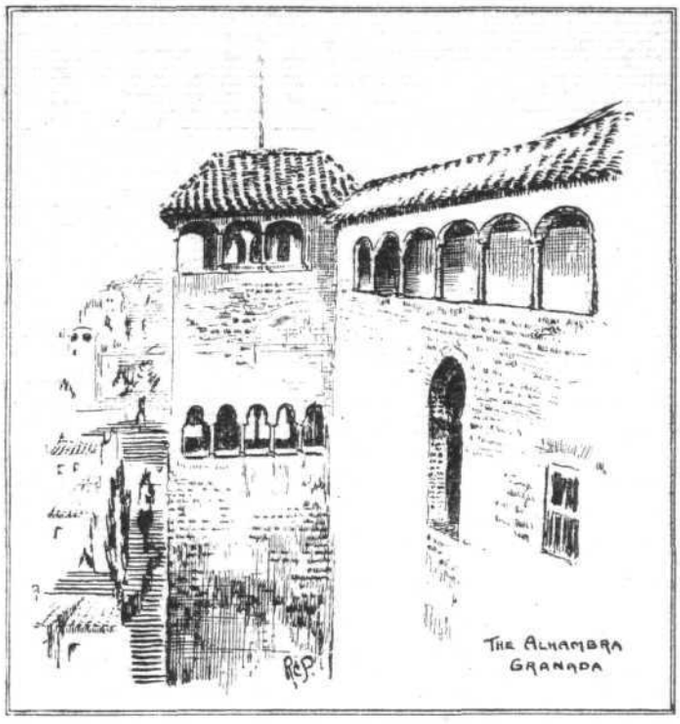
Anti-Aircraft

A QUESTION in the House of Commons on May 31 elicited the information that the War Office is quite aware that the Territorial anti-aircraft batteries are grievously short of technical equipment and that what they have is extremely antiquated. Mr. Duff Cooper, Financial Secretary to the War Office, said that steps were being taken to improve the position as far as financial circumstances permitted. This revelation merely emphasises the necessity, on which FLIGHT has frequently commented, of transferring these batteries, and the searchlight companies, from the War Office to the Air Ministry. They are a part of air defence, and they take their operational orders from the Air Officer Commanding-in-Chief Air Defence of Great Britain. On the trifling excuse that the guns and searchlights are situated on the ground, it has been decided that they must be provided by the War Office and manned by the Territorial Army instead of by the Auxiliary (or regular) Air Force. Hence arise the evils of dual control. As General Ashmore wrote in his book *Air Defence*, " The ground troops have two masters pulling in opposite directions ; the R.A.F. only want them efficient, the War Office only want them cheap."

MOROCCO BOUND

By FLIGHT-LIEUT. R. C. PRESTON, A.F.C., A.M.I.Ae.E.

A well-known writer on aero subjects recently stated that organised air tours of flying club members would shortly become popular. If this is the case—and from all accounts it is most likely—then Morocco is surely a country well deserving the attention of the organisers



MORE than once it has been said that the future air route to South Africa lies down the West Coast of Africa. Whilst it is difficult to reconcile oneself altogether to this view, there is no doubt that there will be big future developments along this coast in the direction of South America, and it will in any case be interesting to outline a few features of a tour to Morocco, Bathurst, and the Canary Islands, undertaken recently with Her Grace the Duchess of Bedford in her "Puss Moth," G-ABOC.

Perhaps one's only excuse for calling attention to this very interesting tour is the hope that others who contemplate a similar itinerary may derive some useful information. Hitherto private aircraft have been few and far between, even as far only at Bathurst, which, as a glance at the map will show, is barely "round the corner." It is, in fact, on the same degree of latitude as Aden, and if, in thinking of Africa, one conjures up visions of heat, black savages and exotic birds and flowers, then it is only when one reaches Bathurst that one can truly say "This is the Africa we have been looking for."

On such a tour one point is most forcibly demonstrated, and that is that the English language carries one a very little way. Spanish may be a luxury, but French is almost a necessity, and prospective travellers will do well to rub up any conversational capabilities.

Having arranged all preliminaries and obtained all necessary maps, permits, and so on, through the good offices of the enterprising Aviation Department of the Automobile Association, one starts south through France and Spain, and a stop should always be arranged at Granada.

The tendency, perhaps, is to reach Alicante or Malaga for the night's rest, but he who has not seen Granada has missed one of the brightest jewels of that land, for the Alhambra Palace, the last Moorish stronghold in Spain, is a relic of rare beauty. Moreover, the airport is "super-Hunter," and one receives very adequate attention from the Spanish Air Force stationed there.

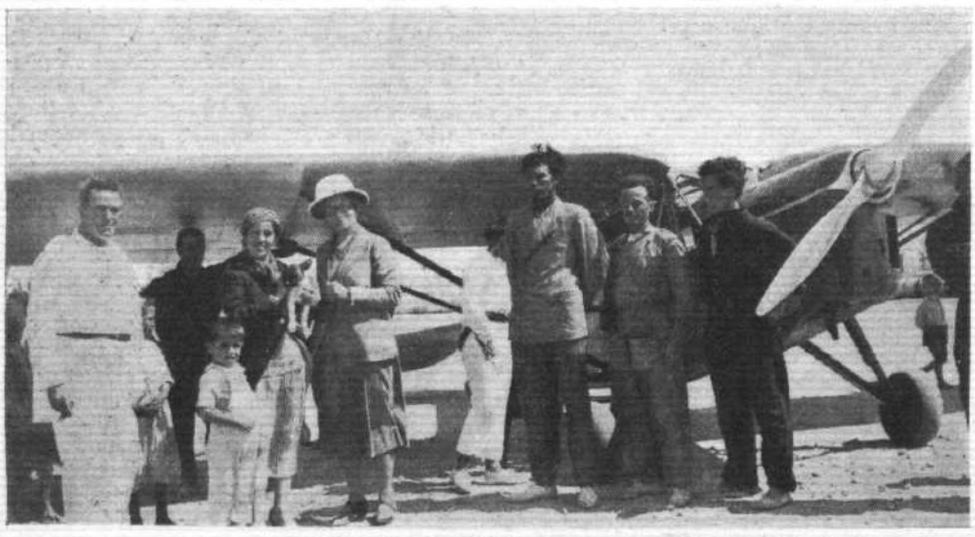
From Granada it is 200 miles to Tangier, the first African aerodrome, but at present a stay there is not advised. The town lies in an International Zone, and it can only be presumed that the airport, which is thirty kilometres from anywhere, is "nobody's baby." Sufficient fuel should be taken on at Granada to carry one through to Rabat or Casablanca.

Both these towns are pleasant Moroccan resorts, but the former is undoubtedly the more intriguing of the two, with its very picturesque *Jardins des Oudyahs*. Casablanca is little more than Marseilles in miniature. Each town, however, has a fine airport and good hangarage, and the tourist may safely undertake his first "routine" after leaving England—and perhaps his last before the sand-blasted shores farther south.

Here it is opportune to mention that sand and wind during the greater part of the year will be the daily ration for the next 1,500 miles or more. A stiff breeze off the Atlantic may dispel heat, but this is also apt to ruffle the temper.

After leaving Rabat or Casablanca, one can say that the flesh pots of Morocco are behind. Agadir, a dullish resort one hazily connects with a pre-war "incident," is actually about the last link with civilisation. The only incident we noted was a 40-m.p.h. gale which blew the sand off the dunes like smoke, a most peculiar effect when viewed from aloft.

The journey from Agadir to Cape Juby takes the traveller into Spanish territory, a rather miserable coast and a foretaste of what is to come. There is a Spanish military aerodrome at Ifni, a slice inserted for some unknown reason in French territory, and from here it is well to fly high and to seaward, for *les Moors* have an



AT VILLA CISNEROS: The Duchess of Bedford with the Governor of Rio di Oro and his family.

evil reputation, of which more anon.

Cape Juby is merely an example of a fort as depicted in a P. C. Wren novel, the Spanish Air Force in residence in lieu of the Foreign Legion. For accommodation one must take what one is given and be thankful, and if the aircraft must be left to look after itself, lock it up, for the native element which surrounds the fort is ever curious. Now the advantage of a thermos full of good Casablanca coffee and some such sustenance as Ryvita is apparent, for the meal to be taken in the aviation mess may be long deferred, and, when it comes, not altogether to one's taste. There is no question of lack of hospitality, for the garrison is most generous, but *c'est la guerre*, and it is hard living.

IN THE CANARIES : Parking out at the airport on the Grand Canary. Note the hangar in course of construction.

Thence the next stage is to Villa Cisneros, a similar outpost situated on a long sandy promontory some 360 miles onward. There is nothing between but sea, sand, and sun. They call part of it Rio di Oro, but one might be excused for interpreting it Rio di 'Orror, for a less attractive coast would be hard to find.

The injunction to fly high has to be considered in conjunction with wind force and direction. At certain times of the year the trade winds blow on the surface, whilst at 6,000 ft. one may find contrary ones which, unless allowed for, may cause anxiety as to fuel. It is well to inquire on such matters prior to leaving the ground.

Villa Cisneros is the headquarters of the Governor of Rio di Oro. I do not envy him his job ; sand must blast his brain even if it does not hinder the growth on his chin. He is a domesticated man ; his family of four thrive in such uncongenial surroundings, and their hospitality on both our visits to his fort was more than merely formal.

A third two-hundred-mile stretch of miserable coast takes us to Port Etienne—another realistic example for P. C. Wren. A kindly Air France representative and his madame offers hospitality—and shelter from the wind. One sleeps in the fort, and may rest secure in the knowledge that a hundred Senegalese troops are roosting under the battlements.

Another 360 wasted miles over a country known as Mauretania bring us to Saint Louis. There is an emergency ground rejoicing in the name of Nouakchott, some 145 miles before, but there is nothing to be obtained there except by special arrangement.

Saint Louis is interesting, for in the days when the Senegal River was a link with the interior it must have been a busy town. Now its quays are deserted and, but for being a seat of government, it has relapsed into almost complete obscurity. Accommodation, by the way, is a problem here, but for us it was solved by the Shell agent, who took us under his roof.

It is now but a short flight to Dakar, but the tourist should first get permission to land, as it is a very "purple" patch. We made Thies direct from Port Etienne on our way south, and obtained permission there.

Of Dakar itself, one can say but little, as we saw it from an advantageous viewpoint as guests of S.E. the Governor-General of Afrique Occidentale Française at their magnificent Palais. But there do appear to be fairly adequate hotels, and there is enough to amuse for two or three days.

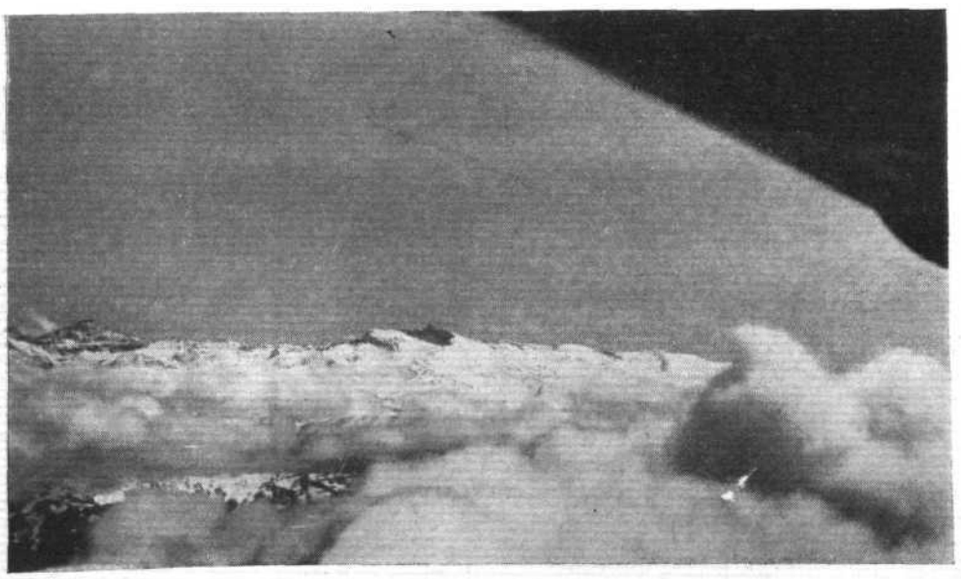
Finally Bathurst—ninety odd miles away—but the character of the country changes quickly from the sub-tropical to the tropical, and one descends with eagerness at the excellent aerodrome at Cape St. Mary, glad to talk English again to the officers of the W.A. Defence Force, who come to greet one and carry one off to their delightful mess on the edge of the ocean to taste iced beer and gaze out at 3,000 miles of lapis sea. Should the tourist be a bird lover, there is enough to interest him or her for a month—birds are protected in the Gambia and provide the equivalent in W. Africa to big game in E. Africa.

Bathurst "Blues"

This little colony—it is only some seventy square miles in area, though it has Protectorate rights up the Gambia River for some 250 miles—is almost surrounded by French territory. It has become the jumping-off place and point of arrival of the S. American mails, no doubt largely through its geographical position. Apparently realising the importance, it has introduced a flat rate of charges for its aerial visitors, and this rate is £1 a day or part of a day. Now, if a hangar were provided, this might be reasonable, but as the only shelter is the local armoury, to the lee side of which one tethers the machine like a cow, it appears that someone has perpetrated a rather expensive joke. This little matter of landing fees has been pointed out by others, but one might be excused for referring to it again, as it may, if persisted in, give flying folk a bad impression of the Gambia which it does not otherwise deserve. Furthermore, though it occupies an important position, it is small, and unless it encourages tourist or operator, it may find itself missed out.

Our two days at Bathurst will not easily be forgotten. The Governor, Mr. Richards, and his wife had only just themselves arrived from Borneo, but they were lavish in their hospitality and kindness. Nevertheless, as they can hardly be expected to act as hosts to all intending visitors, it is time good alternative accommodation in the way of a rest house should be planned.

The tourist will be well advised to give his engine careful scrutiny here—whether he proceeds south towards Freetown, east of Tambacunda, or as we



OVER THE SIERRA NEVADA : No forced landings here !

did, north again to Saint Louis. The dust of the journey hitherto will probably have penetrated tanks and/or carburettor, however careful he may be in the matter of filters. This remark is based on experience, for about a hundred miles north of Saint Louis we did have a stoppage, and a landing had to be made in a happily-placed salt pan. This was alleged to be friendly country, but it was an incident that would not have allowed repetition a few hundred miles farther north.

This was not the only forced landing from this cause, despite further drainings and flushings of petrol systems, for while returning from the Grand Canary, some ten miles or so from the volcanic island of Fuerteventura ("Fort Fortune," and not Spanish for "frightful wind up!"), we were at 6,000 ft., and 4,000 ft. had to be lost in a series of dives and with much throttle movement before the stoppage began to clear itself. The problem before us was whether to hang around that miserable island, or venture over the next sixty miles of open and very rough sea to Cape Juby. In fact, we compromised, and made our height again over the island, giving us courage to take the latter course.

Dogs and Canaries

All this is not described just to make a story but to illustrate to others that even "Gipsy" engines feel the burden and heat of the day and do not thrive on a diet of dust. The Canaries (incidentally, the name is derived from dogs and not birds!) are very well worth the detour of some 300 miles. The airport at Gando, on the Grand Canary, is over an hour's drive from Las Palmas, which is a drawback, but private tourists seldom arrive, and if information is wirelessed beforehand from Cape Juby, as it certainly should be, the visitor will probably be met by the ever enterprising Shell organisation.

A flight we made over Teneriffe, another sixty miles farther on, was one of the most magnificent. A joyriding company might well do good business if it included this as an attraction to passengers of the liners, though a more convenient aerodrome would be essential.

The fact that we carried two very well-defined bullet holes in our starboard wing, though we knew nothing about them until found in course of inspection, testified that to enjoy the Rio di Oro and its neighbouring coast it is necessary for the motor to turn and turn well.

But once over that beautiful but rather sinister barrier, the Grand Atlas, into Morocco again, one almost invites the engine to misbehave for the pleasure of parking in some of the glorious green meadows of that pleasant land. We made for Marrakesh (pronounced "Mrackesh"), and would not have missed it for worlds. From the perhaps expensive comfort of the Mamounia one can enjoy a Garden of Eden which must be unrivalled. The colours baffle description and always in the background there are the snow-covered contours of the Atlas. The aerodrome here is a French military station, and a good hangar is available in which to perform all the rites called for in a "routine." Spain is a big country, and if one is about to tackle the journey home it is well to ensure perfect airworthiness before leaving a country where flying is almost a normal means of transport. We stopped at Rabat, and then, omitting Tangiers after previous experience, made direct for Granada. The Straits of Gibraltar in this instance were in pleasant contrast to their appearance on our way south, when one of the depressions off the Atlantic, which use the Straits as a tram line, was entering the Mediterranean.

The route from Granada to Alicante takes one along the edge of the Sierra Nevada, which is a range of snow scenery well worth a camera. It is a longish flight from Alicante to Perpignan, and much bad weather can be met along the Spanish coast. It is not advisable to be too clever and fly either above the clouds or in them on this stretch, unless one can claim considerable experience of it, for the coast is very rugged. We omitted to call at Barcelona this time because, apparently, the formality of clearing Customs outwards from Spain is optional. Anyway, neither Alicante nor Perpignan seemed to mind.

Thence we made Geneva for that very enterprising event, the International Aero Show, but Switzerland will probably only be included in the return journey if the purse still remains to be emptied, for it is now a rather most expensive country.

For a change we returned to England via Zurich, and the one-and-a-half hours' flight from Geneva carries one over the finest scenery imaginable.

Hints for Tourists

For those whose appetite is whetted the points of such a flight may be summed up. If it is for pleasure, do not try to do too much; take a rest every four days or so. Both the human and the aircraft motor want attention, and the fitness of both is paramount. Always carry food and water, and a Thermos will not come amiss. It is amazing how a stick of barley sugar and a few Horlick's malted milk tablets help to while away thirty thirsty kilometres. To those who like mental recreation, a stock of cross-word puzzles and a backgammon board are recommended.

When all is said and done, for every hour flown there will be seven more to be put away, and they cannot all be passed in eating, sleeping, and exercise, though each plays its part.

Touching the important matter of finance, it is curious how opinions will differ as to the cost of a trip of this nature. Out of 24 nights, 17 were spent in hotels, many of which provided more than ordinary comfort. If one assumed that the hospitality enjoyed on the remaining seven nights was not available and that one was prepared to accept a slightly lower standard of comfort to balance the extra expense so involved, one can safely say that the cost for two people will not exceed £150, to which, of course, must be added fuel charged on the Shell Carnet for some eighty hours' flying.

For the interest and independence enjoyed, surely this compares favourably with some of the "cruises" advertised as "from 42 gns.," touching only at pre-arranged ports, and on which the tourist will be led up the garden path of further expenditure, and be left a helpless victim of surroundings usually comparable to Hastings Pier on a Bank Holiday?

WINIFRED SPOONER MEMORIAL

Bronze Unveiled by
Mr. Lindsay Everard, M.P.

ON Thursday of last week honour was paid to the memory of the late Miss Winifred Spooner by the Woman's Automobile and Sports Association when Mr. W. Lindsay Everard, M.P., unveiled a bronze of Miss Spooner, presented to the Association by a member who wishes to remain anonymous. The Viscountess Elibank, President of the Association, opened the ceremony. Mr. Everard, to whom Miss Spooner acted as pilot for two years before her death, spoke at length of her achievements, which, he declared, had done more real good for aviation than any of the much boomed long-distance flights of others. Miss Spooner, he said, had shown that flying was a reliable means of transport, and that was far more important than feats of endurance which convey an impression that aviation is still in its infancy.

The bust, which is the work of Mr. Donald Gilbert, is to occupy a position of honour in the Association's club rooms at 17, Buckingham Palace Gardens, S.W.1.

ENGLAND—AUSTRALIA RACE

Entries from Thirteen Countries

BRIEF particulars of the de Havilland "Comet" have been released, and the manufacture of component parts has now been started. Three of these machines are being built for the England-Australia Race, and will be flown by Mr. and Mrs. J. A. Mollison, Mr. Bernard Rubin and Mr. Ken. Waller (who recently made a survey flight to Australia and back in a "Leopard Moth" in less than six weeks), and Mr. C. W. A. Scott and Mr. T. Campbell Black. The de Havilland Company gives an assurance that the aircraft will conform as nearly as possible to the "ideal" for the race, having regard to the route, length of stages, climate and other conditions likely to be encountered. The type is a low-wing cantilever monoplane, with accommodation for two pilots seated in tandem behind the main planes, and, following recent de Havilland practice, the wings have a pronounced taper. Two special "Gipsy Six" racing engines, developing 230 h.p. each, are fitted, and it is probable that variable-pitch airscrews, adjustable on the ground or in flight, will be used. The undercarriage consists of two independent wheels, which retract into fairings behind the engines. The span is 44 ft. and the length 29 ft. A rumour puts the figure for the cruising speed at about 230 m.p.h. and the range at about 3,100 miles.

Modified Service Types

There are several other interesting British entries to record this week. A Fairey IIIF., fitted with a Napier "Lion" engine, has been entered by F/O. G. D. Davies. The IIIF., for several years, has been one of the standard General Purpose types used in the R.A.F., and when "cleaned up" a speed of about 160 m.p.h. might be obtained. Although the normal flying range of the standard IIIF (G.P.) is 400 miles, auxiliary tanks may be fitted, increasing this figure to 1,520 miles. Two "Foxes," also Fairey Service (or rather ex-Service) types, are also to be used. One of these has been supplied to the New Guinea Centenary Flight Syndicate (Australia) through a firm of British aeronautical consultants. The second machine has been entered by Mr. James K. C. Baines, of New Zealand. The "Fox" to be used by the New Guinea Syndicate will be considerably modified, and it is probable that the top speed will be in the neighbourhood of 170 m.p.h.

A special three-four seater cabin-type Miles "Hawk," fitted with a "Gipsy Major" engine and long-range tanks, has been entered by Mr. H. L. Brook. Other British entries include two de Havilland "Moths" and two "Dragons." One of the "Moths," fitted with a "Gipsy Major" engine, has been entered by Mr. W. J. Cearns, and the other, a "Gipsy I Moth," by Mr. William Courtenay. This latter machine is to be piloted by Capt. W. L. Hope, who won the King's Cup Race in 1928. Two de Havilland "Dragons" appear on the entry list. One has been entered by the Oliver Nicholson New Zealand Centenary Race Committee and the other by Mr. Alan S. Butler, Chairman of the de Havilland Aircraft Co., Ltd. It is possible that the New Zealand entry may be a "Dragon VI" (two "Gipsy Sixes"), but Mr. Butler's machine is likely to be a standard "Dragon."

New Airspeed Designs

Airspeed, Ltd., are busy, at present, preparing quite a contingent of machines for the race. Sir Alan Cobham has entered a Siddeley "Lynx"-engined "Courier" having a top speed of 162 m.p.h., a cruising speed of 143 m.p.h., and a range of approximately 1,500 miles. A similar aircraft, but fitted with a Siddeley "Cheetah" engine, has been entered by R. K. Dundas. The top speed of this version is 170 m.p.h., cruising speed 150 m.p.h., and range approximately 1,500 miles. Three twin-engined "Airspeeds" are being built. Two of these are known as "Envoys," and bear the type numbers A.S.6 and A.S.7, as they differ in matters of equipment. They have been entered by Lord Nuffield and Lady Cobham. Each is fitted with two Wolseley radial engines, and will have a top speed of 170 m.p.h., a cruising speed of 153 m.p.h., a landing speed of 60 m.p.h., and a range of about 1,500 miles. Fastest of all the "Airspeeds," however, is the A.S.8, to be flown by Capt. Neville Stack and Mr. Turner. This type, fitted with two supercharged Siddeley "Cheetah" engines, should attain a speed of over 200 m.p.h., and have a range of about 2,000 miles.

Flt. Lt. G. Shaw has entered a British Klemm "Eagle." When fitted with a Napier "Javelin," this type has a top speed of 160 m.p.h., but when fitted with a more powerful "Gipsy Six," this figure is improved by about 10 m.p.h. Carlos Cudell Goertz (Portugal) has entered a Comper "Kite," one of the latest British "sports" type two-seaters. This aircraft was described in FLIGHT for May 10, 1934. A Lockheed machine, probably a "Vega," has been entered by Lt. H. R. A. Kidston, R.N. It is most likely that this is the machine in which Lt. Kidston's brother, Lt. Com. Glen Kidston, R.N., made a fast flight

List of Entries

No.	Entrant	Nationality	Aircraft
1	Aircraft Exchange and Mart, Ltd.	Gt. Britain	Airspeed "Courier" A.S.5
2	A. O. Edwards	Gt. Britain	D.H. "Comet"
3	Hospitals Trust, Ltd.	Gt. Britain	Bellanca
4	J. A. Mollison	Gt. Britain	D.H. "Comet"
5	T. Neville Stack	Gt. Britain	Airspeed A.S.8
6	H. F. Broadbent	Gt. Britain	D.H. "Fox Moth"
7	F. Lombardi	Italy	P.L.3
8	Wedell Williams Air Service Corporation	U.S.A.	Wedell Williams 303
9	Lyon Flight Expedition Co.	U.S.A.	Lockheed "Orion"
10	Capt. Edouard Corniglion-Molinier	France	Wibault
11	K.L.M.	Holland	Fokker F.XXVI
12	K.L.M.	Holland	Fokker F.XXII
13	K.L.M.	Holland	Fokker F.XVIII
14	K.L.M.	Holland	Douglas D.C.2
15	Louise Thaden	U.S.A.	Beech A.17.F
16	Russell Hosler	U.S.A.	Hosler Mono-Airplane
17	J. Cochran	U.S.A.	2.P.L.C.M.
18	Laura Ingalls	U.S.A.	Lockheed "Orion"
19	R. W. H. Everett	Gt. Britain	D.H. "Puss Moth"
20	Societé Idrovolanti Alta Italia	Italy	Savoia-Marchetti
21	André Roussy de Sales and Jean Lacombe	France	Bernard 84
22	Vicomte Jacques de Sibour	France	Couzinet
23	F/O. G. D. Davies	Gt. Britain	Fairey III
24	H. L. Brook	Gt. Britain	Miles "Hawk"
25	W. J. Cearns	Gt. Britain	D.H. "Moth"
26	Bernard Rubin	Gt. Britain	D.H. "Comet"
27	Keith Reider	U.S.A.	Keith Reider Monoplane
28	John H. Wright	U.S.A.	Lambert Aircraft Corp. Monoplane
29	New Guinea Centenary Flight Syndicate	Australia	Fairey "Fox"
30	J. Woods and H. C. Miller	Australia	Lockheed "Vega"
31	Sir Charles Kingsford Smith	Australia	Lockheed "Altair"
32	Murray B. Dilley	U.S.A.	Vance Monoplane
33	Lt. Marshall Lindholm	Sweden	"Delta"
34	Lt. Michael Hansen	Denmark	Desoutter Mk. II
35	Michael Detroyat	France	Lockheed "Orion"
36	Wiley Post	U.S.A.	Lockheed
37	Dutch Syndicate	Holland	Pander monoplane
38	Carlos Cudell Goertz	Portugal	Comper "Kite"
39	V. L. Chaudi	India	Not yet stated
40	Ruth Nicholls	U.S.A.	Lockheed "Altair"
41	Flt.-Lt. G. Shaw	Gt. Britain	Klemm "Eagle"
42	M. Freton	France	Potez-Lorraine
43	Bleriot Aeronautique	France	Bleriot III
44	Oliver Nicholson*	New Zealand	D.H. "Dragon"
45	Alan S. Butler	Gt. Britain	D.H. "Dragon"
46	William Courtenay	Gt. Britain	D.H. "Moth"
47	Sir Alan J. Cobham	Gt. Britain	Airspeed "Courier"
48	Lord Nuffield	Gt. Britain	Airspeed "Envoy"
49	Lady Cobham	Gt. Britain	Airspeed "Envoy"
50	R. K. Dundas	Gt. Britain	Airspeed "Courier"
51	James K. C. Baines	New Zealand	Fairey "Fox"
52	Lt. H. R. A. Kidston, R.N.	Gt. Britain	Lockheed
53	Harold Gatty	U.S.A.	Douglas
54	Clyde Pangborn	U.S.A.	Granville Brosl Monoplane
55	Roscoe Turner	U.S.A.	Douglas
56	Wolff Hirth	Germany	Messerschmitt
57	Capt. Lyon	U.S.A.	Lockheed "Altair"
58	Comm. G. R. Pond and C. Sabelli	U.S.A.	Bellanca
59	André Gueit	Algiers	Caudron monoplane
60	Stanley C. Huffman	U.S.A.	Stinson "Reliant"
61	Walter T. Varney	U.S.A.	Lockheed
62	Roy W. Ammel	U.S.A.	General Aviation monoplane
63	David W. P. Clough	U.S.A.	Cessna monoplane
64	Salvador Farre	U.S.A.	Percival "Gull"

* New Zealand Centenary Race Committee.

to the Cape in 1931. A "Wasp" engine is fitted which gives the aircraft a top speed of roughly 185 m.p.h. Although competitors of several nations are entering American machines, Salvador Farre (U.S.A.) will use a Percival "Gull" ("Javelin").

Seven More Lockheeds

Lockheeds continue to be favoured by many entrants. Seven have been entered since our last issue went to press. Of these entries only three have been received from America. Wiley Post, as expected, has entered a Lockheed, probably his famous *Winnie May* of "round-the-world" fame. This machine has, of late, been considerably modified. An "Altair," the fastest of the Lockheed range, is to be flown by Ruth Nichols. The "Altair" is generally similar to the "Orion," but has accommodation for only one or two persons, and, when fitted with a "Wasp" S.1D.1 engine, the top speed, at 2,200 ft., is 230 m.p.h. As the machine is designed as a long-range freight carrier, there should be ample storage for auxiliary tanks. Mr. Walter Varney, an American, has also entered a Lockheed, and this will probably be an "Orion." Two "Douglas's" of unknown type, but both, it is rumoured, twin-engined "Airliners," will be flown, one by Harold Gatty, who went round the world with Wiley Post in the *Winnie May*, and the other by Roscoe Turner, hero of many fast long-distance flights. Clyde Pangborn has chosen a "Gee Bee" monoplane with a "Whitney" engine. It is probable that this aircraft is either the "International Courier" or the "International Super Sportster," both of which were described in FLIGHT for February 22, 1934. Com. G. R. Pond and Mr. C. Sabelli have entered a Bellanca. The big General Aviation GA.38 triple-engine monoplane, of which we published a drawing in FLIGHT of February 1, 1934, has been entered by Mr. Roy W. Ammel. A low-wing monoplane fitted with a "Wasp" engine will be used by Keith Reider. Two of the latest American entries are from Mr. Stanley C. Huffman and Mr. David W. P. Clough. The former has entered a Stinson "Reliant," examples of which type are now frequently seen in this country. Although unquestionably comfortable, the suitability of the machine for long-distance racing remains to be seen. A "Lycoming" engine of 225 h.p. is usually fitted giving a cruising speed of 115-120 m.p.h. Mr. Clough's machine is a Cessna monoplane of unknown type.

Mr. John H. Wright (U.S.A.) has chosen a Lambert Aircraft Corporation's "Monocoupe." This is a two-seater enclosed-cabin, high-wing, strut-braced monoplane, usually fitted with an engine of from 90 to 145 h.p. The "Monocoupe" model D., using a Warner "Super Scarab" of 145 h.p., has a maximum speed of 165 m.p.h. A "Vance" monoplane with a "Wasp" engine entered by Murray B. Dilley also figures in the list. We have no details of this aircraft, but recall that a "Vance" monoplane appeared some months back, a tractor machine with the tail carried on two booms. The cruising speed was rumoured to be in the neighbourhood of 200 m.p.h. Yet another American entry is from Capt. Lyon, who will use a Lockheed "Orion."

Five French entries have lately been received, MM. André Roussy de Sales and Jean Lacombe, with a Bernard 84 (Gnôme-Rhône "Mistral"), and Vicomte Jacques de Sibour with a Couzinet. It is not definitely known if this latter machine is the low-wing monoplane described in FLIGHT of April 12, 1934. A Potez with a Lorraine engine and a Blériot have been entered by M. Freton and Blériot Aéronautique respectively. There are rumours that the Blériot is a low-wing monoplane with a Gnôme-Rhône "Mistral," geared and supercharged radial engine and with a retractable undercarriage. As expected, Detroyat has entered the "Orion" he purchased during his recent honeymoon to U.S. He has installed a Hispano-Suiza engine, which is probably one of the American Wright series built under licence in France.

Pander "Postjager" Entered

From Holland comes the "Postjager" monoplane with three Wright "Whirlwinds." This machine, which has been entered by a Dutch syndicate, is credited, in its standard form, with a cruising speed of 186 m.p.h. and a maximum speed of 223 m.p.h. There should be ample room for extra tankage.

Lt. Marshall Lindholm, of Sweden, has entered a Northrop "Delta" with a Pratt & Whitney "Hornet" engine. It is possible that this aircraft is the one at present being used by A.B. Aerotransport. The maximum speed is about 223 m.p.h., the cruising speed 187 m.p.h., and the range of the standard version 1,550 miles.

Up to the present one entry from Denmark has been received. This is the Desoutter Mk. II, with a "Gipsy III" engine, from Lt. Michael Hansen. An entry of a "Messerschmitt" has been received from Herr Wolff Hirth. One would deduce that the machine is to be fitted with a Hirth engine. Two other foreign entries, from Mr. V. L. Chandi (India) and M. André Gueit (Algiers) have been received. The make and type of Mr. Chandi's aircraft is not yet known, but M. Gueit has entered a Caudron low-wing monoplane.

THE GLOSTER "GAUNTLET"

Performance of the Latest Version

WE are now able to publish "maker's" performance figures of the latest version of the Gloster "Gauntlet" single-seater fighter, fitted with the Bristol "Mercury VI.S" engine, which has been adopted as the standard Day and Night Fighter of the R.A.F. Both in top speed and rate of climb this aircraft is superior to the specialised interceptor fighters put into service only three or four years ago, and it carries night-flying gear, wireless reception and transmission equipment with which these machines were not hampered.

Much of the credit for the excellent performance of this machine must go to the Bristol "Mercury VI.S" engine, which uses the new fuel of 87 octane value and delivers a maximum of 605 h.p. at 2,400 r.p.m. This engine is similar in general arrangement to the "Pegasus," but is fully supercharged, runs at a higher speed and has a higher compression ratio and shorter stroke. It is fitted with a combined Townend ring and exhaust collecter.

GLOSTER "GAUNTLET"

Bristol Mercury VIS. Engine

Performance

Speed at 15,800 ft. (*4 816 m*)	228 m.p.h. (*367 km/h*)
Stalling speed	59 m.p.h. (*95 km/h*)
Climb to 15,000 ft. (*4 572 m*)	6·25 min.
Climb to 20,000 ft. (*6 096 m*)	9 min.
Service ceiling	35,500 ft. (*10 820 m*)
All-up weight	3,950 lb. (*1 790 kg*)
Petrol capacity	80 gall. (*364 litres*)
Oil capacity	5 gall. (*22,7 litres*)

MISSION FROM NEPAL AT CROYDON

Inspection of Aerodrome and Aircraft and a demonstration by No. 17 (F) Squadron

GEN. BAHADUR SHUMSHER JUNG BAHADUR RANA, the Special Envoy from Nepal, members of his staff and attached British Officers, visited Croydon Airport on Thursday last. The Mission was received on behalf of the Secretary of State for Air by Air Vice-Marshal F. W. Bowhill, Air Member of Council for Personnel.

Diana, the first D.H. 86 (four "Gipsy Sixes") to be delivered to Imperial Airways was waiting on the apron when the Mission arrived. The whole Mission was taken for a flight over London in this aircraft by Maj. Brackley, and all were obviously impressed by the machine's beautiful lines and outstanding performance.

During the morning No. 17 (F.) Squadron, R.A.F., had flown over from Kenley, where this squadron is now stationed. The nine "Bulldogs" ("Jupiter VII.F") were lined up on the aerodrome and were inspected by Gen. Bahadur, who displayed great interest in the complex armament and equipment of the machines. The "Bulldogs" of No. 17 Squadron have lately been modified and are now fitted with wheel brakes and a tail wheel. The inspection completed, the machines took off in squadron formation. From this formation they changed to line astern and flew towards the centre of the aerodrome. Suddenly the leader came down in a very steep dive towards an R.A.F. lorry which had taken up its position on the aerodrome. He was followed at close intervals by the other members of the squadron, and the machines "straafed" the lorry in rapid succession. After pulling out of the dive the machines broke from the line-astern formation and carried out a converging attack which the visitors regarded with awe. To complete the attack a flight of five machines dived in formation on the lorry. The machines then re-formed squadron and flew back to Kenley.

OUR VISITOR FROM NEPAL: Gen. Bahadur Shumsher Jung Bahadur Rana, of Nepal, inspects a Bristol "Bulldog" at Croydon.

Several civil aircraft were later inspected, including the Handley Page 42 *Hengist* (four "Jupiters"), Monospar S.T.6 (two Pobjoys), Westland "Wessex" (three "Genet Majors") and an Armstrong-Whitworth "Argosy" (three "Jaguars").

Later the Mission inspected the administrative buildings of the airport and were given an explanation of the organisation of the airport and of the control of civil air services. Night lighting and other airport equipment was inspected.

AERIAL PHOTOGRAPHY EXHIBITION

Magnificent examples on view of the numerous applications of Aerial Photography

LORD LONDONDERRY, Secretary of State for Air, opened the Exhibition of Aerial Photography and Survey at Bush House on Monday, June 4. In his opening speech Lord Londonderry said that he had great pleasure in opening this Exhibition of yet another application of the aeroplane to the uses of mankind. The office of Secretary of State for Air compelled its holder to devote much anxious thought to the machinery of destruction, but happily those duties were matched by others of a wholly different kind. The technical knowledge that is gathered in secrecy by belligerent nations is sooner or later demobilised and put to constructive uses. Aerial photography was a by-product of war, and it was natural that a good many years should elapse before the knowledge of what it could do for the arts of peace became generally understood. At the Exhibition, said Lord Londonderry, one saw aerial photographs of land and water, of town and country, of things past and things in the making. They constituted by far the most rapid and convenient means of collecting topographical detail that have ever been devised; for by its power of storing up one record on another, to be inspected subsequently in detail and at leisure, the aerial camera might even be said to have outstripped television itself. The year 1934 had already been a notable one for civil aviation by reason of the rapid growth of air travel in the British Isles. It was, therefore, all the more gratifying that the organisers of the Exhibition should have been able to bring forward at this time such convincing testimony of the ability of aerial photography and air survey to take their place in the equipment of modern science. Lord Londonderry was delighted that the Air Ministry had been able to make its contribution to the Exhibition.

Eighteen firms, each connected in some way with aerial photography or air survey, supported the Exhibition, which was organised by Aerofilms, Ltd. Hundreds of air photographs of the British Isles and abroad, air surveys and maps prepared from these pictures, a variety of types of cameras, plotting instruments, and a host of other scientific accessories are on view. Among the cameras are the "Eagle" which took the Mount Everest photographs, and a new experimental five lens camera covering miles of country at each exposure. Ingenious apparatus to measure the contour of the ground, camera guns, huge air photographic posters, scale models of aircraft and of "ideal" airports are other items of interest. Public schools are sending parties of scholars to the Exhibition as an aid to their education. Perhaps the greatest attraction is a collection of photographs taken by the Houston Mount Everest Expedition last year.

The Exhibition is open free to the public from June 4 to June 9, from 10 a.m. to 7 p.m. (on Saturday until 1 p.m.).

THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS

The Air-France Tragedy

Shortly after 5 a.m. on May 31 an Air-France mail aeroplane struck a wireless mast at Croydon after taking off. Both the pilot, Capt. Raymond Defives, and his assistant, Roger L'Huillier, were killed. The accident is commented on in a leader and in the Croydon Notes.

"The MacRobertson Interceptor"

According to an American contemporary, the British Government will seriously consider the adoption of the winning machine in the England-Australia race for modification as an interceptor fighter.

THE RAPIER "COURIER": Air Vice-Marshal A. E. Borton, Director of D. Napier & Son, Ltd., has had one of his company's "Rapier" engines fitted to this Airspeed "Courier," and has entered the combination in the King's Cup race. A high performance is expected. (FLIGHT *Photo.*)

A School Aerodrome

The masters and boys of Bryanstone School, Dorset, are constructing an aerodrome. Two of the masters are qualified pilots, but flying will *not* be taught at the school!

Canadian Airways

Although the mileage covered by Canadian Airways, Ltd., last year was slightly smaller than in 1932, both freight and passenger loads increased considerably.

Wear and Tear

The aviation correspondent of a particularly well-informed daily remarked not so long ago that a certain machine operated "... within a radius of 780 miles, while a used model in good condition has a normal radius of about 593¼ miles." The odd quarter would be difficult to explain.

Jean Batten at Sydney

Representatives of both the Australian and the New Zealand Governments welcomed Miss Batten when she arrived at Mascot Aerodrome, Sydney, on May 30.

Twenty-five Years Ago

From FLIGHT *of June 5th, 1909.*

"By the remarkable trip made with *Zeppelin II* at Whitsuntide, when a distance of some 800 to 1,000 miles (said to be 940 miles) was covered before returning to earth, and when the vessel remained in the air from the Saturday evening until the Monday morning, Count Zeppelin once more established a record for the dirigible balloon."

Customs

Both Liverpool (Speke) and Hull (Hedon) have been officially approved as Customs aerodromes for clearance of passengers and goods.

An American Monster

According to a provincial paper, Col. Fitzmaurice's MacRobertson racer will be "fitted with a double row of Wright engines." No doubt Bellanca is "putting it over" on the Dornier Do.X.

Speed in Europe

The first of a fleet of Northrop "Delta" ("Hornet") machines ordered by the Swedish air lines has started work by flying from Stockholm to Paris, a distance of 1,000 miles, at an average of 214 m.p.h.

Douglas "Dolphin" for France

The famous Parisian clothing manufacturer, M. Esders, has purchased a Douglas "Dolphin" amphibian (two P. & W. "Wasps"). This machine, incidentally, will be the fifth operated by the Esders works, and will be housed at Le Bourget.

Mr. Pirow's Reply

Speaking of the South African Government's policy in connection with Union Airways, Mr. Pirow repudiated the suggestion that negotiations were being spun out by the Government without any intention of coming to an agreement, and that he was forcing Imperial Airways on to a route which they did not want.

The "Joseph le Brix"

An inspection of the Bleriot monoplane flown by Codos and Rossi revealed the fact that one of the propeller blades was split, and this probably accounts for the vibration complained of during the Atlantic flight. Incidentally, this five-year-old machine has already taken off, with full load, some twelve times, and has flown about 100,000 miles.

PRACTICE: The Hawker "Harts" of No. 57 in squadron formation on the occasion of the A.A.F. "At Home" last Sunday. (FLIGHT *Photo.*)

Wireless

A decision was adopted by the International Air Navigation Committee at Lisbon by which all aeroplanes carrying more than 2,000 km. must be fitted with wireless.

German Air Day

Air celebrations were held throughout Germany on Sunday as part of an Air Sports Week which is intended to increase "air-mindedness."

Liverpool's Airport

An aviation section is to be formed in the Liverpool Chamber of Commerce now that the K.L.M. is running a service through Hull to Speke.

Cord in England

The American car and aeroplane magnate, Mr. Errett Lobban Cord, was at Heston last week with a Stinson monoplane. Apparently he is over here to escape kidnappers! Among the many firms in which he is interested are: Stinson, Lycoming, Smith Propellors, and American Airways.

A Private Venture

Some interesting facts have come along from Mr. L. G. Reid, who recently purchased the Mollisons' "Dragon" (G-ACJM) with the idea of making a purely private attack on the long-distance record. On June 18 he will, with his co-pilot and partner, Mr. J. R. Hyling, and the "Dragon," sail for Canada, and will be ready to take off from Wasaga Beach, Toronto, whenever weather conditions are perfect for an attempt to fly to Baghdad or beyond.

During the past week or two they have been practising take-offs, at Pendine, with gradually increasing loads, and the machine, which has been renamed *Trail of the Caribou*, is now at de Havillands undergoing a complete overhaul. The partners will, until June 15, be at Hamble taking a special blind-flying course in order that they may learn to fly up to three hours "under the hood" without fatigue.

BAPTISMAL: Miss Fiona Mackinnon, aged thirteen months, christens her father's new "Dragon" at Penhurst Aerodrome. The machine is equipped with Marconi directional wireless.

Nottingham Airport

The Nottingham Corporation has approved the sale of ground on the west side of the city to the London Scottish and Provincial Airways, Ltd., as an airport for East Midlands.

Into the Stratosphere

A new ascent into the stratosphere is being arranged by M. Cosyns, who accompanied Prof. Piccard.

Improving the Touring Aeroplane

Under the auspices of the French Government, the Association des Inventeurs et Petits Fabricants Français is to organise a national competition for the improvement of touring aeroplanes. The awards will be made after consideration of the following points:—(1) The controllability and stability of touring aeroplanes under varying aerodynamical conditions; (2) the possibility of landing on small areas surrounded by obstacles; (3) the ability and rapidity of rising from small areas; and (4) the production of a machine which will embody low power, low weight, and low cost, while, at the same time, providing maximum safety.

U.S. Naval Review

Two hundred aeroplanes escorted the fleet into New York Harbour during the giant American Naval Review, which was held up by fog for two hours.

Aeroplane for Councillors?

The Liverpool City Council last week recommended the purchase of a two-seater to take Council delegates on business journeys to various parts of the country.

Gwyn Madocks Cup

The results of the Household Brigade Flying Club's competition were as follows:—Serving Members: 1, Lt. D. S. Wedderburn (Scots Gds.), 261 mks.; 2, Capt. G. F. Forbes (Coldstream Gds.), 58 mks.; 3, Lt. J. Mathew (Irish Gds.), unfinished. Non-Serving Members: 1, Mr. L. G. Sykes, 221 mks.; 2, Mr. A. D. Kinloch, 182 mks.; 3, Capt. G. F. R. Hirst, 178 mks.

Aerodrome for York?

A proposal has been submitted to the York City Council for the compulsory purchase of 162½ acres of land, just over the city boundary, for use as a municipal aerodrome. An expert has advised them that the land is eminently suitable for use by the largest type of aircraft.

"Wings over Everest"

We have had "Storm over Asia" and "Thunder over Mexico"—both photographically superb—but from cramped quarters, and fed with oxygen, the photographers on the Houston-Mount Everest Expedition have produced something that even the great Eisenstein would admire. In "Wings Over Everest," shown for the first time at the Curzon opening, there is pictorial perfection, and even the "story," unfortunately necessary to make the show more palatable, is not too melodramatic. The Everest film producer has used the best of the Russian technique, and if Bonnett's camera work is a little overshadowed by the "story," the latter is at least as excellent as possible.

Diary of Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in this list:

June 9. Reading Ae.C. Annual "At Home."
June 16. R.A.F. Reserve Flying Club Annual Flying Display, Hatfield.
June 23. Lancashire Ae.C. Air Display, Woodford.
June 23. Henly Rally, Heston Airport.
June 29. R.A.F. Twelfth Annual Dinner.
June 30. Royal Air Force Display, Hendon.
July 3-9. 4th International Congress for Applied Mechanics, Cambridge.
July 7. Opening of Leicester Airport.
July 8. French International 12-Hours Reliability Trial.
July 8. Competition for Model Aircraft, Great West Road Aerodrome.
July 13-14. King's Cup Race. Start and finish at Hatfield.
July 21. Round the Isle of Wight Air Race.
July 21-22. French Grand Prix.
July 28. Bristol and Wessex Ae.C. Garden Party.
July 29. London-Sherburn Race (York County Aviation Club).
Aug. 11. London-Newcastle Race (Newcastle-on-Tyne Ae.C.).
Aug. 15. Air Tour of Italy.
Aug. 17-Sept. 6. Copenhagen Aero Show.
Aug. 18. Cotswold Aero Club Air Rally and Garden Party.
Aug. 25. Liverpool and District Ae.C. Garden Party, Speke Aerodrome.
Aug. 28-Sept. 16. International Touring Competition, Poland.
Sep. 1-2. Cinque Ports Flying Club International Rally, Lympne.
Oct. 6. London-Cardiff Air Race and Cardiff Ae.C. Air Pageant and Dance.
Oct. 7. Aviation Golf Meeting, Royal Porthcawl Golf Club, Porthcawl.
Oct. 20. England-Australia Race for MacRobertson Prize.
Nov. 16-Dec. 2. 14th International Aviation Exhibition, Grand Palais des Champs-Elysees, Paris.

COMMERCIAL AVIATION

— AIRLINES — AIRPORTS —

FEEDER LINE MACHINES

Three High Performance Civil Aircraft, each with an estimated top speed of at least 170 m.p.h.

PARTICULARS of three fast commercial aircraft of the "feeder line" type, now being built, are contained in a "Résumé of Commercial Information" compiled by the Directorate of Civil Aviation. The fastest of these three, a Blackburn monoplane, will probably be, when completed, the fastest multi-seater commercial aircraft constructed in Great Britain. This machine is an all-metal, low-wing, cantilever monoplane, with retractable undercarriage, and will be fitted with two Napier "Rapier VI" sixteen-cylinder air-cooled engines, each giving 305 h.p. at 3,500 r.p.m. at 10,000 ft. (3 048 m.). Ten passengers and a crew of two will be carried at an estimated cruising speed of 173 m.p.h. (278 km./hr.) at 5,000 ft. (1 524 m.). The top speed should be 196 m.p.h. (315 km./hr.), the landing speed 63 m.p.h. (101 km./hr.), the service ceiling 23,000 ft. (7 010 m.) and the range 500 miles (805 km.). The main dimensions are as follows:—Span, 58 ft. 4 in. (17,81 m.); length, 41 ft. (12,5 m.); height, 12 ft. (3,66 m.); and wing area, 470 sq. ft. (43,7 m.²). The weight empty is given as 4,740 lb. (2 150 kg.), and the total weight, which includes the crew of two, electrical and general equipment, is 8,600 lb. (3 901 kg.). It seems likely that this aircraft will have a Duncanson single-spar wing.

A "Scaled Down" Mailplane

Rather smaller and slightly slower than the Blackburn monoplane are two Boulton & Paul biplanes now under construction for "feeder line" work with Imperial Airways. These machines may be said to be "scaled down" versions of the Boulton & Paul "Mailplane" (two "Pegasus"). They are to be fitted with two Armstrong Siddeley "Jaguar" VIA. engines giving 450 h.p. each, which will be mounted in similar fashion to the "Pegasus" in the "Mailplane." The figure given as a top speed (175 m.p.h.) is interesting in that there is a four-engined aircraft already being used by Imperial Airways, which, though having a lower power, carries a considerably greater payload at about the same speed. The new Boulton & Paul is, however, designed to operate from very much smaller aerodromes, and therein lies the explanation. With a wing loading of 12.55 lb./sq. ft. (61,27 kg./m.²) the landing speed should be rather lower than that of the four-engined machine, for which the figure is 15.6 lb./sq. ft. It is estimated, in fact, to be 62 m.p.h. (100 km./hr.). The main dimensions are as follows:—Length, 40 ft. 6 in. (12,34 m.); span, 54 ft. (16,46 m.); height, 12 ft. 6 in. (3,8 m.); and wing area, 717 sq. ft. (66,6 m.²). The weight empty is 6,000 lb. (2 722 kg.), weight loaded 9,400 lb. (4 264 kg.), and pay load 1,870 lb. (848 kg.). At cruising speed the range should be about 420 miles.

A Six-Seater.

A third aircraft, constructed by A. V. Roe & Co., Ltd., is also of the feeder line type, and is to be known as the "Avro 652." Although of only 554 h.p., it will carry six passengers at a maximum speed of 175 m.p.h., and is a low-wing monoplane with retractable undercarriage. Two Armstrong Siddeley "Cheetah" engines, giving 277 h.p. at 2,100 r.p.m., will be fitted. [illegible] to be [illegible] cruising speed at 1,000 ft. (305 m.) is estimated [illegible] 150 m.p.h. (241 km./hr.), the landing speed 64 m.p.h. (103 km./hr.), duration at cruising speed 3.13 hr., initial rate of climb 950 ft./min. (290 m./min.), and service ceiling 15,600 ft. (4 755 m.). Main dimensions are as follows:—Span, 56 ft. 6 in. (17,22 m.); length, 42 ft. 3 in. (13,17 m.); height, 9 ft. 8 in. (2,98 m.); and wing area, 410 sq. ft. (38,1 m.²). The wing loading, at 16.1 lb./sq. ft. (78,6 kg./m.²), must be considered rather high for a British commercial aircraft. The power loading is 12.24 lb./h.p. (6,35 kg./h.p.). Weight loaded, with a crew of two, wireless, lighting equipment, fuel, and oil, is given as 6,598 lb. (2 993 kg.), and the weight empty as 4,192 lb. (1 901 kg.), while the pay load is 1,080 lb. (490 kg.).

BUENOS AIRES-CORDOBA SERVICE

THE Government aviation works at Cordoba, Argentina, have constructed the machines which are operating on the service between Cordoba and Buenos Aires. In general layout, these aircraft resemble a French design. The type is a low-wing monoplane with 450-h.p. air-cooled engine driving a metal airscrew. Wooden construction is used for the wing and the fuselage of chrome molybdenum steel tubes. The weight empty is 3,858 lb. (*1 750 kg*), gross weight 6,195 lb. (*2 810 kg*), range 6 hours, or 684 miles (*1 100 km*), maximum speed 140 m.p.h. (*225 km/hr*) and cruising speed 121 m.p.h. (*195 km/hr*). At present the service is flown without intermediate landings, but it is hoped that business may soon develop at the various towns *en route*.

RAILWAY AIR SERVICES, LTD.

WING COM. A. H. MEASURES has been appointed to the position of Superintendent to Railway Air Services, Ltd. He joined the staff of the Royal Aircraft Factory in 1912, and from 1917 to 1920 was Officer Commanding Eastern and Western Aircraft Repair Depôts. From 1920 to 1925 he was in Egypt with the Royal Air Force, and was subsequently appointed Officer in Charge of the School of Technical Training, Manston, Kent. On retiring, in 1930, he entered the service of Imperial Airways.

ANOTHER AIR MAIL PENNANT: A new air mail service between Inverness and Kirkwall, Orkney, was inaugurated on Tuesday of last week (May 29) at Londman Aerodrome, Inverness, when the Royal Air Mail Pennant was presented by Sir Frederick Williamson, Director of Postal Services, to Capt. Fresson, of Highland Airways.

HULL—AMSTERDAM AIR LINE

14246

The first air line to operate between the continent of Europe and the North of England was started on Thursday last, May 31, by K.L.M. between Amsterdam and Hull

Alderman and Mrs. Benno Pearlman alighting from the K.L.M. airliner on its arrival at Hull to inaugurate the first direct air service between Hull and Amsterdam. (FLIGHT *Photo.*)

PUNCTUALLY at 3.20 p.m. Com. I. Smirnoff, one of the best-known pilots of the K.L.M. (Royal Dutch Air Lines), landed a Fokker belonging to his company at Hull after the first scheduled flight from Amsterdam. He had on board the Lord Mayor of Hull; Alderman Benno Pearlman, Chairman of the Aerodrome Committee; and other prominent men from Hull, as well as Mr. A. Plesman, General Manager of K.L.M.; Mr. H. Damme, Postmaster-General at The Hague, and several other high officials of the K.L.M. The party was welcomed by the Sheriff and His Excellency the Minister for the Netherlands, Jonckheer Maitre R. de Narees van Swinderen, who were supported by Sir Frederick Williamson, Director of Postal Services, representing the Postmaster-General; Mr. F. G. Bertram, Deputy Director of Civil Aviation, and a large number of Lord Mayors and Mayors from towns in the North of England. After the speeches of welcome had been made and responded to, Com. Smirnoff took up large numbers of those present for a view of Hull from the air. The occasion was a fitting climax to the enterprise of the Hull Aerodrome Committee, whose able chairman, Alderman Benno Pearlman, was the cause of Hull possessing one of the earliest established municipal airports in this country. There is undoubtedly a considerable volume of trade between the North of England and the Continent, and business men will, by virtue of this service, be able to save a large amount of their valuable time. The journey from Hull to Amsterdam now only takes two hours, and for the present, at any rate, K.L.M. will be carrying the service through Hull on to Liverpool, where the machine will be housed for the night. Connecting with this service at Hull, Southern & Central Air Lines and London, Scottish & Provincial Airways are operating machines from Southampton and Croydon, via Nottingham, to Hull, and the first machine on this service arrived shortly after K.L.M.'s Fokker had landed. This was one of the, now well-known, Airspeed "Couriers."

The whole occasion created considerable interest among

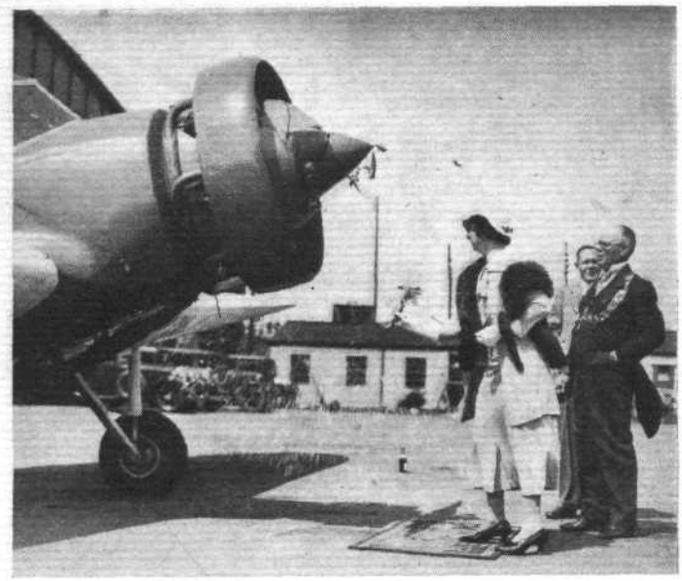
His Excellency the Dutch Minister, speaking during the inaugural proceedings at Hull. Behind him, wearing his chain of office, is the Sheriff, Councillor Arthur Cargill. Facing him, with a paper in his hand, is Alderman Benno Pearlman, the Chairman of the Aerodrome Committee, and on the extreme left, wearing glasses, is the Lord Mayor, Alderman Arthur Shepherd. (FLIGHT *Photo.*)

the local public, who flocked to the aerodrome to witness the arrival of these machines. During the interval between lunch and the arrival, the spectators were both entertained and thrilled by a very fine display of aerobatics given by No. 57 (Bomber) Squadron, R.A.F., who came over in their Hawker "Harts" (R.R. "Kestrels") from Upper Heyford, under the command of Sqd. Ldr. F. W. Walker. Their formation flying was a foretaste of that which will be seen at the R.A.F. Display at Hendon on June 30. Also of considerable interest to the spectators was the arrival of No. 26 (Army Co-operation) Squadron in Hawker "Audax" machines from Catterick, the roar of their R.R. "Kestrel" engines lending a contrast to the more subdued note of the commercial machines.

During the evening the Lord Mayor, the chairman of the Aerodrome Committee, and Sir Arthur Atkinson, first President of the Hull Aero Club, entertained a large number of guests to an Inaugural Banquet at the Guildhall. The toast list was a long one, during which the vicissitudes through which the aerodrome has gone since it was started were explained, and the hopes entertained for its future were enlarged upon.

MR. PLESMAN, with his happy knack of saying the right thing at the right time, in responding to the toast of "The Success to the New International Air Service," very aptly pointed out that aviation was international, and to be successful had to be broadminded, and would, he felt, do a great deal towards bringing back prosperity to all countries. He also said that he expected cruising speeds to increase rapidly in the near future, and hoped that before long K.L.M. would not be the only company operating on this service.

SIR FREDERICK WILLIAMSON replied to the toast of "Our Guests." In doing so he made statements which showed the attitude of our Post Office to air services, and did not have the broad-minded, helpful tone of those of Mr. Plesman. For example, he said that the Post Office was disappointed in the speed with which air mail services had grown since 1919. He did not, however, enlarge upon the singular lack of help which operating companies have had from the Post Office.



A LINK WITH THE SOUTH: Southern & Central Air Lines and London, Scottish & Provincial Airways are operating a connecting service between Southampton and Hull. The Mayoress of Southampton, Mrs. W. D. Buck, is here seen christening one of the Airspeed "Couriers," employed on this service, *City of Southampton*, **at the Municipal Airport of Southampton.**

CROYDON

FOR Air-France and for those who mourn for M. Defives and M. L'Huillier, everyone here feels the deepest sympathy. They lost their lives on Thursday, May 31, when their aeroplane, taking off along the white line, struck the adjacent radio beacon mast during bad visibility. The pilot, Capt. Defives, was but 34, and his companion only 25 years old. They were both experienced men at their jobs and their lives were of value to aviation.

It was not my intention to comment on the cause of the accident. The fault did not lie with the pilot or with his company. When, however, I see that weak and piffling excuses are already being made, I think it wise to say that commercial aviation is in no mood to brook being trifled with at the moment. Nobody who knows anything about the matter will agree that radio beacons form an inevitable risk to aeroplanes. If they are properly positioned and of reasonable height, this is not so. I commend those with such remarks upon the tip of the tongue to pause and look up the minutes of a certain meeting held at Croydon some considerable number of months back. I would also refer them to FLIGHT of January 4, 1934, p. 17, heading "Croydon," para. 2. On the day of the accident Croydon was requested to be gay. It was decked with choice flowers and red carpets were put down. This was to welcome a number of Nepalese notabilities, led by the "Commanding General" of that place. A report of the proceedings appears on page 559.

More important, perhaps, was the fact that the same day most of the senior pilots of Imperial Airways, Ltd., took their tickets on *Diana*. They regard it as the last word in efficiency and performance. *Scylla* came back after minor adjustments on Monday last, and, piloted by Mr. Horsey, went on the Paris service immediately.

There is no actual danger, but there is considerable delay and annoyance to the companies and to the passengers, in the fact that no move has yet been made about the alterations necessary for passports to be examined before the Customs formalities are undertaken. Croydon is the only port of any sort in England, I believe, where the present antiquated system prevails.

K.L.M. have had a number of civic dignitaries travelling to Holland from Croydon during the past week in order to arrive back in Hull, or Liverpool, for the inaugural ceremonies of the new K.L.M. service linking those North-Country towns with the Continent daily. Amongst those who travelled to Holland last week were the Lord Mayor of Hull, Alderman and Mrs. Benno Pearlman, and Councillor Spruit. Alderman Sutton, from Manchester, also crossed by K.L.M.

Olley Air Service has been concerned with a number of trips, personally conducted by Capt. Olley, between Carlisle and places of interest, such as the Lake District. The charter was for daily flights for a fortnight. The way in which a special charter pilot has to be a sort of Cook's guide, as well as knowing every aerodrome in Europe, was illustrated during a job undertaken by Mr. "Bill" Ledlie, of Olley Air Service. Leaving Le Bourget for Nice, sailing instructions were altered in mid-air. The party lunched at Cologne, and made Berlin by nightfall, left Berlin next day for Zurich, but decided upon Cologne, and then changed course for Brunswick and later flew to Hanover. Decided to fly to Hamburg, but arrived at Amsterdam. After inquiry about landing at Cherbourg and Southampton, next day lunched in Brussels, and slept in Paris—which only shows how easy air travel can be.

Rollason Aircraft Services report delivery of a "Dragon," G-ACOR, to Mr. Graham Mackinnon. It is luxurious in its appointments, and Marconi transmitter and receiver and homing wireless are being installed. A point of great interest is the fitting in this machine of the "automatic pilot." This is said to be the first private aeroplane so fitted. An Avro "Tutor" has just been delivered by this firm to British Hospitals Air Pageants for aerobatic work. Rollason Aircraft Services is a comparatively new venture, and it is therefore good to hear the workshops are full with engine and aircraft overhauls.

A. VIATOR.

HESTON

THE British Air Navigation Company announce that they will commence operating a regular daily service to Pourville on June 23, and a similar service to Deauville on July 12. The popularity of their present Le Touquet service indicates that these new airlines should be well supported by those who have acquired the habit of week-ending on the Continent. During the past month this company carried 320 passengers, 9,087 lb. of baggage, and flew 141 hours, covering over 19,000 miles.

Last week again marked a steady increase of the traffic to the Isle of Wight, via "The Island Air Express," the service operated by Portsmouth, Southsea & Isle of Wight Aviation, Ltd., for whom B.A.N.C.O. manage the London terminal.

The Magna Carta atmosphere was diffused over the airport on Tuesday of last week by a number of performers in the Runnymede Pageant who arrived, complete with hauberks, halberds, shifts, wimples and all the appropriate panoply, to be photographed in a modern setting.

During the past month the total hours flown by the Airwork School showed an increase of 96 per cent. on the figures for May, 1933. This is remarkable when taking into consideration the very rough winds experienced throughout almost the whole month.

Wrightson & Pearse have received a contract from a large distributing firm to carry newspapers six days a week to Paris. They transport a daily load of from 800 to 1,000 lbs., in a de Havilland "Dragon," and the start is made at 4.20 a.m.

The Prime Minister landed at Heston on May 28, at 6 p.m., after a flight from Lossiemouth, with his son and daughter, in a "Dragon" belonging to Midland & Scottish Air Ferries. Air Vice-Marshal Borton returned on May 25 from Brussels in his Napier "Gull," and Mr. Francis Francis left with his wife (Sunny Jarman) and child for Geneva, on May 26, in his Sikorsky amphibian.

BIRTHDAY HONOURS

THE following names appear in the official list of honours conferred by His Majesty the King on the occasion of his sixty-ninth birthday:—

Viscount

Charles Cheers Wakefield, Baron, C.B.E., Honorary Colonel, 2nd City of London Regiment (The Royal Fusiliers). For public services, especially to civil aviation.

FOREIGN OFFICE LIST

Air Force Rewards

Air Force Cross

Sqd. Ldr. Francis Joseph Fogarty, D.F.C.
Flt. Lt. Guy Lloyd Carter.

Air Force Medal

973 Flt. Sgt. William Robert McCleery.
364249 Sgt. (Pilot) Edward Norman Rooms.

Civil Awards

C.B. (Civil Division)

Wing Commander Eric John Hodsoll, Royal Air Force, Assistant Secretary, Committee of Imperial Defence.

DOMINIONS SERVICES LIST

Order of the British Empire
Military Division

M.B.E.

Quartermaster and Honorary Flight Lieutenant John Joseph Swift, Royal Australian Air Force.

Civil Division

M.B.E.

Mrs. Maud Rose Bonney. For the first solo flight by an Australian woman from Australia to England.

ORDER OF THE BRITISH EMPIRE

Royal Air Force

K.B.E. (Military Division)

Air Marshal Robert Hamilton Clark-Hall, C.M.G., D.S.O., Royal Air Force.

C.B.E. (Military Division)

Air Commodore John Tremayne Babington, D.S.O., Royal Air Force.

Group Capt. Edward Cecil Clements, O.B.E., M.R.C.S., L.R.C.P., Royal Air Force.

O.B.E. (Military Division)

Wing Commander Alexander Shekleton, D.S.O., Royal Air Force.

Wing Commander Francis Percival Don, Royal Air Force.

Sqd. Ldr. Robert Jope-Slade, D.S.C., Royal Air Force.

Sqd. Ldr. Robert Parker Musgrave Whitham, M.C., Royal Air Force.

Sqd. Ldr. William Forster Dickson, D.S.O., A.F.C., Royal Air Force.

M.B.E. (Military Division)

Flt. Lt. Alexander Hutchinson Montgomery, Royal Air Force.

Flt. Lt. Francis Wilfrid Peter Dixon, M.B., B.S., Royal Air Force.

Flt. Lt. Thomas Henry Jolley, Royal Air Force (retired).

Warrant Officer Charles William Baker, Royal Air Force.

Warrant Officer Herbert James Crane, Royal Air Force.

Civil Awards

C.B.E. (Civil Division)

Capt. Geoffrey de Havilland, F.R.Ae.S., Director and Designer, the de Havilland Aircraft Co.

O.B.E. (Civil Division)

Clement Guy Caines, Esq., M.B.E., Principal, Air Ministry.

M.B.E. (Civil Division)

Lewis Henry Stroud, Esq., Contracts Officer, Air Ministry.

IMPERIAL SERVICE ORDER

Companions

Home Civil Service

Alec Robert Gibbs, Esq., M.Inst.C.E., A.M.I.Mech.E., Superintending Civil Engineer, Air Ministry.

BRITISH EMPIRE MEDAL

Military Division

For Meritorious Service

Royal Air Force

91023 Flt. Sgt. Charles Edward Tucker, Royal Air Force; 246359 Flt. Sgt. John Christopher Marshall, Royal Air Force; 357218 Cpl. Edward Francis Hancock, Royal Air Force.

KING'S CUP ENTRIES

FIVE last-minute entries have been received for the King's Cup Race. One, a D.H. "Tiger Moth" ("Gipsy Major"), entered by Capt. G. de Havilland, will be flown by Mr. Peter de Havilland. Mr. Geoffrey de Havilland, Junior, is to fly the T.K.1 constructed by the de Havilland Technical School. These latest entries bring up the total number of those taking part to 44.

Entrant.	Aircraft.	Engine.
T. A. K. Aga	D.H. "Moth"	"Gipsy Major."
Capt. G. de Havilland	"Tiger Moth"	"Gipsy Major."
A. C. M. Jackaman	Monospar S.T.4	Pobjoy "R."
Sir J. Kirwan	"Percival Gull"	Napier "Javelin."
Mrs. Wise Parker	Blackburn B.2 "Trainer"	

From the Clubs.

Events and Work at the Clubs and Schools

CARDIFF
The monthly landing competition for the half-pint tankard will be held on Sunday, June 10th, at 2.30 p.m.

GATWICK
The B.A.T. School have flown 83.10 hours during the week, making a total of 260.25 for the month. Mr. A. T. Smith successfully undertook the night flying test for his "B" licence.

HANWORTH
Flying time on Club machines for the week amounted to 84 hours 30 minutes, with two first solo flights and one "A" licence. Four new members joined the Club this week, and one is taking an instructors' course with Capt. Wilson.

LIVERPOOL
Cross-countries have been made on club machines from Hooton to Heston, Cambridge, Berck, and several nearer aerodromes during the past fortnight, in which 179 hours were flown. In fact, Hooton has had the best weather for a long time.

BENGAL
During April the Bengal Flying Club managed to put in nearly 131 hours at Dum Dum Aerodrome, and four members passed their licence tests. F/O. Knocker flew Mr. W. W. K. Page, President of the European Association, to Chittagong, but they were delayed for one night by a heavy storm.

CAMBRIDGE
Eighty-six hours were flown during the past fortnight at Marshall's Flying School, with one first solo and several charter flights. Quite a crowd visited the aerodrome on Empire Day. On Saturday, H.R.H. Prince George arrived, in the Prince of Wales' "Dragon," to open the Fair at Madingley Hall. Mr. David Garnett, the author, left during last week for a tour in his Klemm.

BROOKLANDS
Perfect weather during the past week has led to increased flying hours, and 110 hours have been completed—50 dual and 60 solo—with four first solos. Capt. Findlay has been doing more taxi work for Mr. Fred Darling, the famous trainer, and has also been very busy in the sales dept. Incidentally, it was Capt. Findlay who took up Mrs. Leech, who is over 80 years of age, for her first flight.

NOTTINGHAM
A total of 142 hours have been flown by the Nottingham Flying Club during the past month, thus beating the record by a handsome margin. Fourteen new flying members have joined, and the club-house is being improved by the addition of a verandah and other offices. Two Club members have made flights abroad during the month.

HATFIELD
H.R.H. Prince George has promised to attend the Royal Air Force Flying Club's Display on June 16th. A number of famous pilots will take part, and it will be one of the most ambitious "unofficial" affairs of the year, and assistance and encouragement have been forthcoming from both the Air Ministry and private flying organisations. There will be formation flights; mass movements by the Auxiliary Air Force; the "bombing" of a moving motor car; an autogiro exhibition; a parachute drop by John Tranum; demonstrations by test pilots, including, it is hoped, one of the Gloster "Gauntlet." The proceeds are being devoted to the Club's growing needs.

The total flying carried out by the London Aeroplane Club during the month of May was 440 hr. 45 min., an increase of 84 per cent. over the corresponding month of last year, and the best month since June, 1931. Three of our private owners—Sir Derwent Hall-Caine and Mr. Parker in "Leopard Moths," and Mr. Cook in a "Gipsy Major" Comper "Swift"—have entered in the King's Cup Race.

A dance is to be held in the Club House after the R.A.F. Flying Club Display.

READING
At the Club "At Home," which takes place on Saturday next at 3 p.m., there will be an "arrival prize" for the pilot of a machine landing between 2.30 and 3 p.m., demonstrations by eleven manufacturers, and a half-hour visit by No. 600 City of London (B) Squadron. Owing to lack of entries, the ladies' race has unfortunately been cancelled for this year.

On Saturday, Mr. and Mrs. Powis and others flew over to the Brooklands Meeting, and on Sunday more members flew to the London Aeroplane Club Garden Party, where Mrs. Higgs and Mr. Bishop carried off the "bottle race" prize! The registration (G-ACOP) of the new school "Hawk" is vaguely familiar.

SCOTTISH
Landing competitions and a race will be held on the 9th and 10th of June.

The Prime Minister called at Renfrew last week on his way from Lossiemouth to London in an M.S.A.F. machine. He was accompanied by his son and daughter and by Mr. J. C. Sword, who entertained the party to lunch at Ayr.

Completion of the new clubhouse is still being delayed by the plasterers' strike, but flying goes on, and 55 hours were flown last week.

CINQUE PORTS
The flying time for the week was 41 hours, and included solos by Dr. N. and Dr. B. Grellier, who, incidentally, are twins and who went off on the same day. The "Leopard Moth" in which Rubins and Waller flew to Australia and back, came in here with its new owner, Van Der Leeuw, a Dutchman, who is starting this week for Capetown. This machine should certainly have an interesting log book before it gets much older. Flt. Lt. Nick Comper also landed here with the Comper "Streak" on his way back from Paris, and, before leaving, he demonstrated it to the Club, and its performance certainly left its mark.

LEICESTERSHIRE
During the past month 37 cross-country flights were made by Club aeroplanes, and, in addition, Mr. W. Lindsay Everard, M.P., Lt. C. W. Phillips, and Messrs. Reiss, Symington and Heycock made a tour of Europe in Mr. Everard's machines. On Empire Air Day the Club operated at Ratcliffe aerodrome in Mr. Everard's absence, and about 3,500 people were admitted to the aerodrome. Air Commodore J. A. Chamier paid a flying visit, and Mrs. Amy Mollison took children for flights.

The Club officials are very busy preparing for the move to the Leicester City Airport, and the official opening will be on July 7th, 1934.

BOMBAY
On or about June 4 four "Moths" should have left Jehu aerodrome on an instructional tour to England. The route will be Karachi, Baghdad, Tunis, Rome, Cannes, Paris, and Heston, and should be covered in about nineteen days. The flight will be led by Flt. Lt. Binley, chief instructor of the Bombay Flying Club, the Club engineer, Mr. L. E. Reade, will accompany the flight, and each of the pupils will lead the formation in turn. While in London the pupils—Indians, by the way—will see aircraft factories, will receive a complete blind and night flying course, and will be taught the theoretical side of the "B" licence examination, for which they will also sit. Such a tour may become an annual feature.

MIDLAND
Three new members joined the Midland Aero Club, and a good deal of cross-country flying was indulged in during the week.

The team of "Puss Moths" entered for the Doncaster Navigation Race and flown by Messrs. Hodgson, Davison, and Johnson were only successful in obtaining third place, arriving 7th, 9th and 9th, the order in which they started. Although they were disappointed, they had a most enjoyable time. A party, incidentally, flew over to the Hatfield show on Sunday.

BRISTOL AND WESSEX

F/O. C. V. Ogden has joined the staff of the Bristol and Wessex Aeroplane Club as assistant instructor, and a new "Major Moth" was delivered on June 1. During the week the Club aircraft flew 63 hours with two first solos.

The race for the S.B.A.C. Challenge Trophy is to be flown at the Bristol Club Garden Party on July 28. The course consists of three laps of a closed circuit—a total distance of approximately 45 miles. This race is open to all aircraft of British manufacture, which must be the bona fide property of a recognised light aeroplane club or of a member of the club entering, and pilots must have been trained *ab initio* by this club.

HERTS AND ESSEX

Last week constituted a record for hours flown—117. Those for May, incidentally, totalled 375, only 10 short of record month, July, 1933. Two further members are taking advantage of the contract rate, receiving 50 hours' solo flying for £50.

The Club's new Miles "Hawk," G-ACTO, has been received, looking very smart in club colours, orange and brown, and is being kept extremely busy satisfying the long-standing demand of the members for a variety of type. The fleet now includes four "Moths" (two "Gipsy I" and two "Cirrus II"), and one Miles "Hawk." The competition for the "Shelmerdine" Challenge Bowl commences next Sunday.

SOUTH AFRICA

In spite of the distinctly anti-British trend in South African civil aviation, the Rand Flying Club decided to open its new clubhouse—the first "real" one in South Africa—on Empire Day. The clubhouse is from all accounts the most magnificent place, on modern lines, with a large lounge, pilots' room, flight booking office, locker rooms, secretary's office, kitchen, and bar, while the roof has been designed to be either a grandstand or an open-air dance floor.

The membership of the R.F.C. now totals 280, and a second "Gipsy Moth" has recently been purchased. Considering that the club only came into existence eighteen months ago, this is a really good show.

VINCENNES AGAIN

The Annual Two-Days Whitsuntide Aviation Meeting run after a lapse of Three Years

AS usual at Vincennes, the programme for the Whitsuntide Meeting was more than varied, with races, precision landing contests, glider and Autogiro demonstrations, parachute jumping, trapeze work, and the customary aerobatics. The meeting covered two days, Sunday and Monday, and was run under the management of the Société pour le Developpement de l'Aviation, of which the well-known pilot, Maurice Finat, is the chief.

Some fifty machines of various types were ranged in front of the well-filled grandstands, which had been built for the previous Doret-Detroyat contest, and these included Maryse Hilz's Breguet sesquiplane, Kronfeld's latest glider, a C.30 Autogiro brought over by Brie, the record-breaking Caudron "Rafale" low-wing monoplane, and several Blériot "Spad" pursuit machines. Furthermore, development could be studied by a glance at the "cross-Channel" Blériot and that hardy perennial the Farman "birdcage."

The first event on Sunday consisted of the eliminating trials for the contestants in the Georges Dreyfus Speed Race, who covered twenty-five laps of a fifteen-mile course encircling the field. The finals of this contest, in which there were some twenty entries, were flown the next day, and were won by Boris, flying a "Puss Moth" ("Gipsy Major"), at a speed of 101.90 m.p.h. Louis Masotte, on a Blériot "Spad" (230-h.p. Salmson) was second at 93.20 m.p.h., but Jean Gapy, piloting a Potez 43 (100-h.p. Potez), who actually finished third, was disqualified for cutting a pylon.

The Precision Landing Contest was won by Andrew Salel, piloting a Farman type 400 cabin monoplane, who brought his machine to a stop within 12 ft. of the mark. Louis Possien, on a Potez 36, at 29 ft., was second, and Georges Quatremarre, on a Blériot "Spad," at 89 ft., was third.

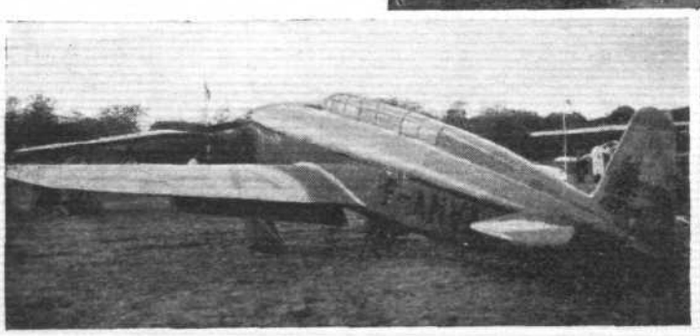
But Robert Kronfeld's gliding demonstration was one of the leading features of the Meeting. Towed to a height of about 3,500 ft. and cast off, Kronfeld remained in the air, encircling the aerodrome, for 2 hours 20 minutes, establishing a new gliding record for the Paris district. His machine was interesting in that the wing span of his glider could be varied by detaching the ends of the wings. For long gliding flights Kronfeld uses the full span of 71½ ft., but removes his wing extensions for such work as stunt flying. The wings, incidentally, are of trapezoidal shape.

A demonstration which must be "something new and strange" to French people followed, when Mr. Brie put the direct-control Autogiro through its paces. Mr. G. L. Harrison, of Sale, Cheshire, who was flown over by Mr. Stephen Cliff in a Miles "Hawk," was another English visitor. Two Portuguese officers, flying a Junkers "Junior" (Siddeley "Lynx"), and a D.H. "Tiger Moth" ("Gipsy Major"), respectively, gave the usual aerobatic display.

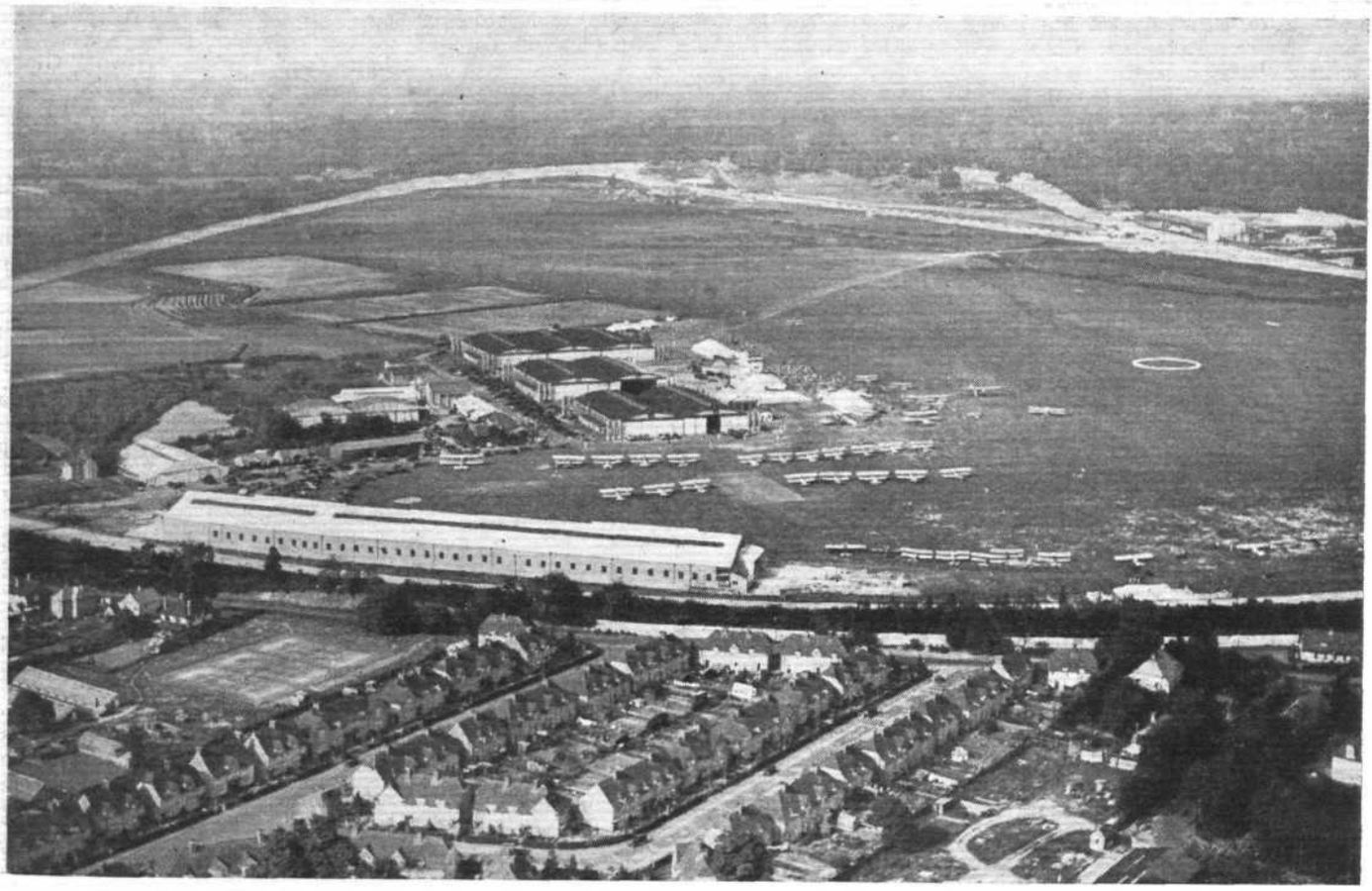
One of the most interesting machines at the meeting was the Caudron "Rafale" (Renault-Bengali), which made several flights around the field. Equipped with split flaps having a chord of 30 per cent. that of the wing and a Ratier variable-pitch propeller, the take-offs and landings of this machine were quite remarkable, in view of its top speed.

Before the meeting closed, the Air Minister, Gen. Denain, arrived from a similar affair in a three-motor Dewoitine Colonial type monoplane, with Col. Davy and several members of his staff.

R. C. W.



VARIETY AT VINCENNES: The upper illustration shows the Junkers "Junior" flown by Capt. Placedo Abreu, of Portugal. Below, left, is the record-breaking Caudron "Rafale" low-wing monoplane, and right, G. L. Harrison (centre) and Stephen Cliff (right) who flew the Miles "Hawk" from Heston: with them is R. A. C. Brie, who came over on the Autogiro.



BROOKLANDS FROM THE AIR LAST SATURDAY: In the foreground is the new erection shed for Hawker Aircraft, Ltd. On the other side of the aerodrome may be seen the aircraft works of Vickers. (FLIGHT *Photo.*)

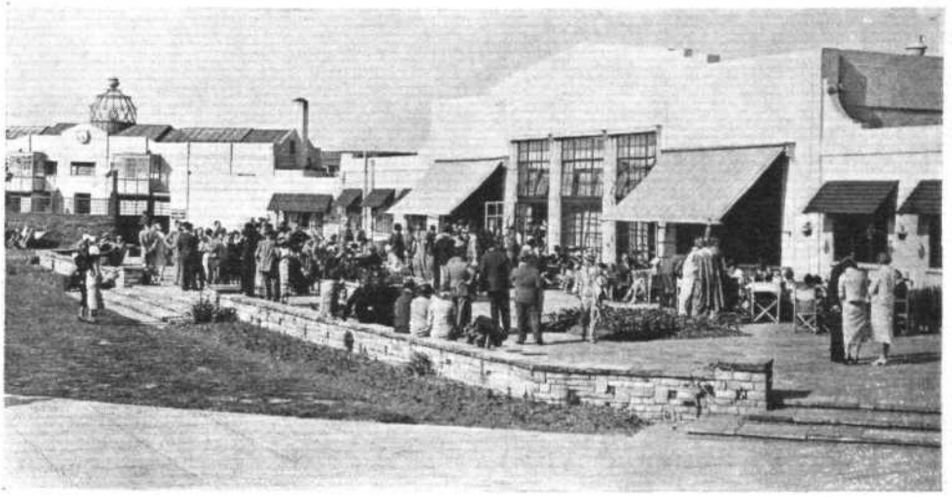
SUCCESSFUL CLUB MEETINGS

The season of Club flying meetings opened last week-end with gatherings at Brooklands and Hatfield

RAPID growth in the volume of private-owner air traffic was an outstanding feature of last year, but judging by the attendance at both Brooklands and Hatfield during the week-end, that growth is likely to be considerably greater during the present season. Both these meetings were private ones to which the friends of the organisers came by invitation, the general public not being admitted. Therefore, both were rather more Garden Parties than purely spectacular flying meetings. For a long time now FLIGHT has advocated this form of social activity for flying clubs rather than the big public flying meetings, at which the financial risks are great and the gain seldom equal to the trouble involved to the members.

Well over 60 visiting aeroplanes, of what might be called the private-owner type, lined the edge of Brooklands aerodrome last Saturday, besides which a very considerable number of Service machines arrived with guests. Hawker Aircraft, Ltd., and Vickers Aviation, Ltd., were joint hosts with Brooklands Aviation, Ltd., while the Masonic Flying and Country Club had accommodation

LOOKING DOWN: Visiting machines can be seen parked round the edge of the aerodrome, while in the foreground is the large Vickers "Vellox." (FLIGHT *Photo.*)

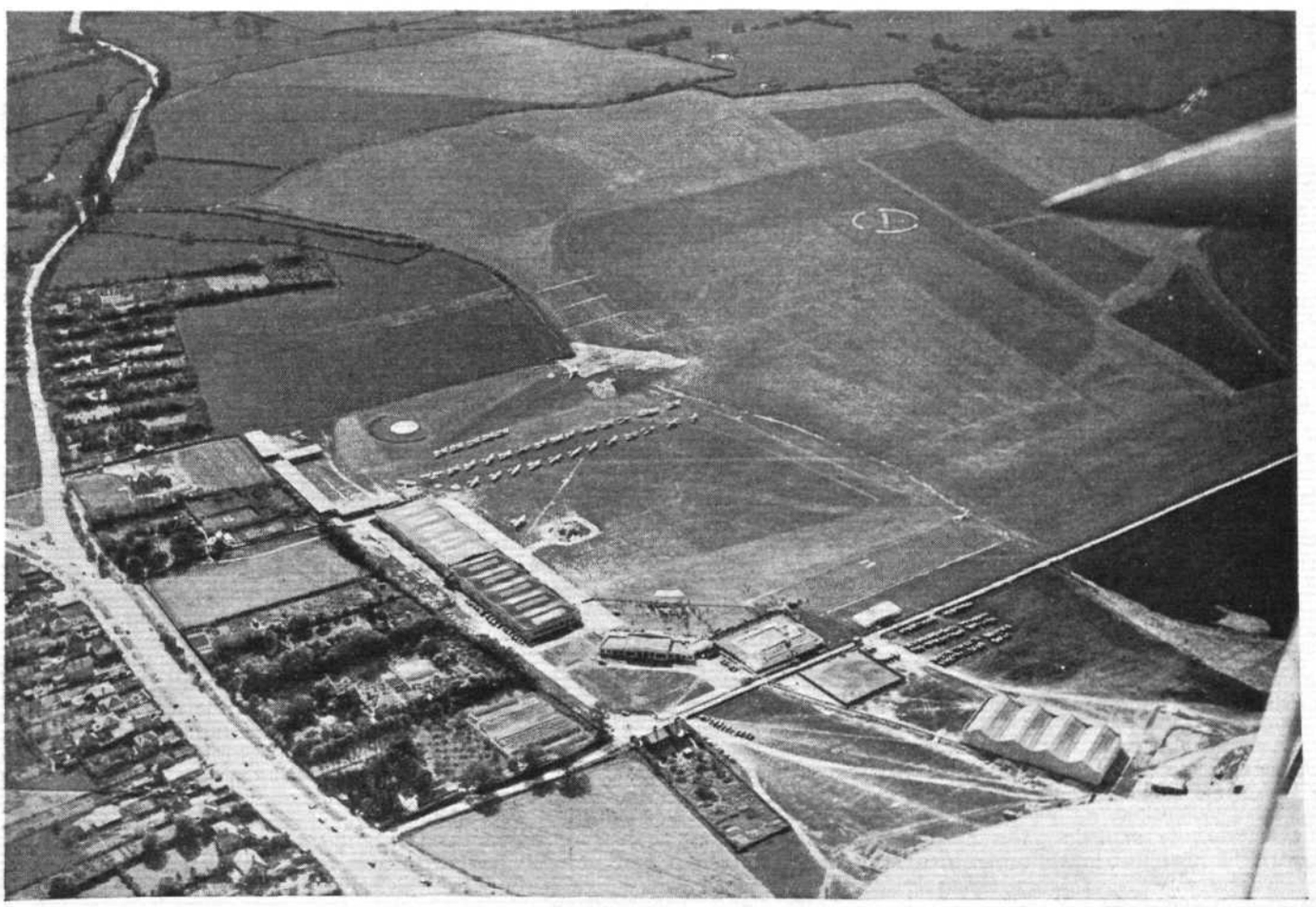


A SUNNY SITE : Guests of the London Aeroplane Club enjoying the sun on the terrace at Hatfield. (FLIGHT *Photo.*)

for their own members. The two manufacturing companies had special marquees for the entertainment of their friends, and both companies had invited not only Service pilots, members of the aircraft trade and of the Air Ministry, but also a large number of foreign visitors. Among these we noticed the Acceptance Commission from Portugal, who were no doubt pleased to see the very fine performance put up by Mr. P. E. G. Sayer on a "Fury" (R.R. "Kestrel"), which was one of those now being supplied to the Portuguese Government. Other types of Hawker aircraft which were shown off were the "Hart" (R.R. "Kestrel"), flown by Mr. P. W. S. Bulman, Hawker's Chief Test Pilot, and another "Hart," but with a Bristol "Pegasus" engine, flown by Mr. P. G. Lucas. Vickers provided entertainment by putting a twin-engined "Velox" (Bristol "Pegasus") and a "Vildebeest" ("Pegasus") into the air. The former can be arranged for passenger, troop or freight carrying, and the latter is the well-known torpedo bomber used in the R.A.F. and abroad. Displays were also given by Mr. George Lowdell on a Hawker "Tomtit" (Wolseley), Mr. Harris, Chief Instructor of the London Aeroplane Club, on a "Tiger Moth," and Mr. Tangye on his Comper "Swift" (Pobjoy). The outstanding event was, perhaps, a display of synchronised aerobatics by two flights of No. 43 (Fighter) Squadron from Tangmere flying Hawker "Furies" (R.R. "Kestrel"). They performed in a manner which permits of no criticism. This squadron has become known as one from which everyone may justifiably expect aerobatics of outstanding accuracy, and their display on Saturday was rather in the nature of practice for what we shall see at Hendon later.

During the afternoon Mr. Raymond Quilter and Mr. A. W. Fairlie jumped out of Brooklands School "Moths" and made safe descents, despite the high wind, with G.Q. parachutes. This parachute was also shown in its various forms in the school hangar, which housed a widely varied show of items of aeronautical interest especially arranged for the occasion.

The London Aeroplane Club's Garden Party on the following day was a very happy combination of amusing non-aeronautical events and flying displays. There was not too much of either, so that the interest was sustained and the Club's visitors enjoyed themselves thoroughly. Flying displays were given by Flt. Lt. W. E. P. Johnson, whose aerobatics on a "Tiger Moth" have many times been commented upon most favourably in our pages. The finished manner in which he shows, not only how



HATFIELD : This is what the aerodrome looks like from above. Part of the new de Havilland Aircraft Works can be seen in the right-hand bottom corner. (FLIGHT *Photo.*)

A REWARD : Mrs. C. C. Walker making Mr. P. G. Lucas a presentation in recognition of his display in the Hawker "Hart." (FLIGHT *Photo.*)

manœuvres should be made, but also how they should not be made, is both educative and amusing. Mr. R. A. C. Brie handled an Autogiro in a manner which proved its wonderful utility. He stood still in the air and landed vertically, flew fast and slow, took off in a very short space and climbed rapidly. He was flying the latest C.30 direct-controlled type (7-cyl. "Genet Major"). A contrast was given by Mr. P. G. Lucas, a test pilot of Hawker Aircraft Co., Ltd., in the company's demonstration "Hart" ("Kestrel VI"). Mr. Lucas not only "roared up" the aerodrome, following with an almost incredibly sustained climb, but also showed that the "Hart" could fly quite comparatively slowly.

Since the De Havilland Aircraft Co. took over the direction of the London Aeroplane Club many amenities have been added to those originally provided there. For example, the swimming bath is an attraction, and this was enhanced on Sunday by a bathing costume parade and a swimming demonstration by Miss Betty Blanks, the 100 yd. Southern Counties Breast Stroke Champion for 1932. The visitors were entertained to a tea dance in the clubhouse, and they could also sit comfortably on the terrace while they watched various amusing events, like the wheelbarrow race, which was won by Mr. Humble and his passenger; the hat-trimming competition for men, which was won by Mr. Graham MacKinnon; the bottle race by Mr. Bishop, of the Reading Aero Club, who steered his passenger, Mrs. Higgs, along a tortuous course and disturbed the least number of bottles; and finally a pilot's obstacle race, which was won by Mr. W. Yamamoto.

During the afternoon, Nos. 18 and 57 (Bomber) Squadrons, R.A.F., and Nos. 600 and 601 Squadrons, A.A.F., flew over in the course of exercises, forming part of their practice for the R.A.F. Display at Hendon.

The machine park was also open so that the visitors could inspect the many machines—over 40 of which arrived during the afternoon—and there they evinced great interest in the many types, among which was the "Martlet" ("Genet") in which Mr. E. M. Wright won the arrival competition. It was disappointing, however, that the D.H. 86 four-engined airliner, or *Diana*, as she is called by Imperial Airways, which had been expected, could not be brought over.

"STALLING"

A Summary of the Twenty-second Wilbur Wright Memorial Lecture, given by Professor Melvill Jones before the Royal Aeronautical Society

FEW places could be more suited to the delivery of the Wilbur Wright Memorial Lecture than the Science Museum, South Kensington, and last Thursday evening Professor Melvill Jones spoke almost in the shadows of the original Wright machine and of the Supermarine S.6b. The lecturer was introduced by Mr. C. R. Fairey, President of the R.Ae.S., who also presented the year's awards, which are given elsewhere.

The Lecture

Were it not for the dangers inherent in the stall, the art of flying would probably have been mastered in very early times, and until this phenomenon is thoroughly understood aviation will not be free to play the great part it is destined to play.

Knowing that some inexplicable reason lay behind the previous tragedies, the Wright brothers decided never to leave the ground by more than a few feet until the trap had been discovered, and this decision marks the real beginning of the present era of flight. They discovered that at slow speeds either wing was liable to start a sudden rearward and downward motion, and countered this tendency by interconnecting the rudder and wing warping controls, very much after the manner in which slots and flaps are experimentally arranged to-day.

From that time the development of the light petrol engine enabled pilots to fly safely above the stall, and accidents were attributed to an "error of judgment." But, after the war, it was realised that a phenomenon which was responsible for two-thirds of the fatal accidents merited at least a careful study, and the Aeronautical Research Committee started upon a research campaign.

We now know how to avoid the worst dangers, and, the first urgency having passed, scientists may settle down to study the stall in an atmosphere of calm. But the variations, almost inexplicable, in the reactions of different machines show that the problem is far from being completely solved.

Two different kinds of experiment have been used—those on models and on machines in actual flight. Pilot psychology cannot be allowed for in the first, and the difficulties of dealing with three velocities in the second have been considerable. The work at Farnborough and the courage of the persons concerned in this work have rarely been adequately praised.

Calculation, based on wind tunnel experiments, showed that the spin was exceedingly sensitive to yawing moments, and this explained the failure of the ailerons to check it and the importance of good rudder control. Afterwards came the Handley-Page slot and the "interceptor," so that the discoveries of the Wrights were, in effect, rediscovered.

The next thing was to find out exactly what happened to the air flow over a stalled and semi-stalled wing. In 1912, Professors Bairstow and Melvill Jones, working with the old wind tunnel at the N.P.L., were shocked by the "precipice curves" indicating the complete and sudden loss of lift at low speeds, and these curves are still fair examples of the three typical ways in which aerofoils behave.

At Cambridge, in 1932, however, a new technique was developed, in which undamped balances gave the greatest and least forces rather than the mean fluctuations, and, from this, results were obtained which show up some aspects of the stall in a new light.

It was found that aerofoils could be divided into three main groups, according to the way in which lift and drag varied during the stall. In the first the lift rises and the drag increases slightly at incidences above 7 deg., whilst at 17 deg. lift falls and drag rises suddenly. In the second, severe fluctuations persist over an incidence range of some 5 or 6 deg., and the onset of these fluctuations coincides with the passage of the incidence of maximum mean lift. In the third, the fluctuation increase does not occur until an incidence several degrees greater than that of maximum lift, which passes without any marked fluctuations.

A study of the flow changes over an aerofoil shows that the first noticeable sign of approaching stall is the forma-

tion of a region in which the "total head" falls below the constant value which it would have in installed flow, but in which there is no definite separation of the stream from the surface. During this stage, which precedes the true stall, the air stream may separate from the leading edge, but quickly rejoins the surface.

But this is only of theoretical interest and merely gives warning that the true stall is approaching. It is in accordance with what happens in the next stage that the aerofoils fall into one of the three previously-mentioned groups.

In the first case the definite separation of the stream from the upper surface occurs suddenly and completely from the leading edge, so that the boundary of the main stream passes well clear of the remainder of the aerofoil, and a permanent region of "dead air" of uniform low pressure was formed over the entire upper surface. This change coincides with the discontinuity in the force curves, and occurs only when there is a large difference between the values of the lift before and after the critical change. If the difference is not so large, the first complete separation is followed by a remarkable and inexplicable phenomenon.

It appears that the boundary of the main stream may alternate between two fairly distinct forms. One is that in which the boundary passes well away from the trailing edge and is clearly defined towards the front. In the other form the boundary is also clearly defined towards the front, but remains within three or four inches (on full scale) of the surface, for about half the width of the aerofoil, and then becomes difficult to define. The alternations of the flow between these two forms are very rapid when thought of in terms of measurement of forces on a small model, but they are surprisingly slow in terms of the distance travelled by the aerofoil through the air. Either kind of flow can persist while the aerofoil travels through a distance equal to 20 or more times the length of its chord. These alternations are responsible for the violent fluctuations indicated by the sudden widening of the space between the lift and drag curves.

Flow Separation

Disregarding the shallow "bubble" of turbulence which may form behind the leading edge at relatively low incidences, the first clear sign of the separation of flow from the leading edge always coincides either with a complete discontinuity in the force curves or with the onset of violent fluctuations. This, however, does not necessarily happen at the incidence of maximum lift; with some aerofoils, particularly when they are thick and have the maximum camber far back from the leading edge, the first definite separation of the flow occurs near the trailing edge. This region expands gradually with increasing incidence and lift falls gradually without serious fluctuations or discontinuities. Eventually, however, the flow separates suddenly from the leading edge and the characteristic fluctuations appear, but at an incidence considerably greater than that of maximum lift.

It appears that, as the incidence of a wing of moderate thickness increases, there are two points in the boundary layer where the conditions tend towards separation of the flow from the surface, one of which is near the leading edge and the other near the trailing edge. A kind of race develops between these two conditions. If the "front stall" wins, discontinuities or violent fluctuations mark the attainment of maximum lift, whereas, if "rear stall" wins, all such violent phenomena are postponed to incidences considerably higher than that of maximum lift.

The occurrence of "rear stalling" modifies the main flow so as to reduce the danger of "front stalling," and hence when "rear stall" wins the race, even by a small margin, all violent fluctuations or discontinuities may be postponed until many degrees beyond the incidence of maximum lift. It does not take much imagination to see how this state of affairs may account for the peculiar sensitivity of some wings to small changes of shape and to other variables.

A general study of the published records of experiments on wings suggests that while front separation is postponed by increasing Reynolds number, rear separation is encouraged. This will be found to explain most of the complicated effects of change of scale which have hitherto been so puzzling.

It appears that the flow may alternate through wide limits, even when the incidence is maintained strictly constant. In manœuvres of an aeroplane in flight, sudden changes of the forces on parts of the wings may have very disconcerting effects, and the point is that it is these sudden and local changes which are responsible both for the principal remaining dangers of the stall and for the difficulties which we experience in predicting behaviour from calculations based on model experiments of conventional type.

It should therefore be our aim to eliminate these sudden changes altogether or postpone them to incidences which cannot be reached in ordinary manœuvres, and since we cannot hope to locate them by studying curves of lift and drag obtained in the conventional way, we must find other means of doing so.

In the experiments on aeroplanes in flight at Cambridge, the flow is studied by watching, or photographing with a small cinematograph, the movements of little tufts of wool fastened to the fabric of the wings, and to very light posts temporarily erected upon their upper surface. In unstalled flight these tufts remain practically still, pointing backwards, but when the wing is completely stalled they are violently agitated for a certain distance from the surface, but beyond this distance they stand out steadily in the air stream. The dividing line, of course, marks the boundary between the main stream and the dead air. There are many variations in the behaviour of the tufts, but at present we are concentrating upon broad features only.

The wings of the aeroplane used have a section for which the flow separates first from the leading edge and then fluctuates between the two forms previously mentioned. The incidence at which these flow variations begin coincides exactly with the incidence at which the pilot begins to notice those erratic plunging movements which everyone knows as characteristic of the stall.

The Remaining Problems

When measurements of lift and drag were obtained, it was noticed that though the lift curve changes direction rather abruptly at 16 deg., there was no indication of any sudden change in the forces themselves. When, however, this aeroplane was stalled in a manœuvre in which incidence changes progressively, the change of flow over the unslotted parts of the wings, from the unstalled to the fully-stalled state, may occur very suddenly and permanently so that the full effects of a discontinuous force change may be felt. This phenomenon of sudden stalling was met for the first time when we were attempting to discover the cause of a very disconcerting sudden change of behaviour of the aeroplane in steep turns, begun at some 40 per cent. above the stalling speed in straight flight. It was found then that the sudden flow change occurred at exactly the same instant as the change of behaviour and that its effects were greatly aggravated by sympathetic stall of the tail, caused no doubt by the change of the down wash from the wings.

This sudden change is not nearly so dangerous as the deadly spiral turn which may follow a stall on an unslotted aeroplane, but we now believe that it is responsible for the greater part of the few remaining accidents which still occur from stalling on slotted aeroplanes when they are steeply turned near the ground.

Summarising, it seems that the older methods will need to be supplemented by new methods of experiment which will enable sudden local changes of force and flow to be detected. On the model scale, this calls for quick-acting balances which record changes of lift and drag whilst incidence is progressively changing, and for some means of studying flow to supplement force measurements. On the full scale the examination of the flow by some simple methods which can be easily applied in flight will be necessary for investigations. By such means it should be possible in time to recognise the forms of wing which are liable to sudden flow changes in any of their parts and either cease to use them or use only those on which the trouble is postponed to incidences greater than those employed in ordinary manœuvres.

Until we know when and how the stall occurs on each part of the wings in flight we shall not reach any clear understanding of the reasons why aeroplanes behave as they do.

At the conclusion, Lt. Col. J. T. C. Moore-Brabazon thanked the lecturer in a very amusing little speech, and the room moved on to refreshments and a conversazione.

The awards were as follow:—First British Gold Medal to Capt. G. de Havilland; Simms Gold Medal to Sir Gilbert Walker; the Wakefield Gold Medal to Señor J. de la Cierva; and the Taylor Gold Medal to Mr. A. Plesman.

THE ROYAL AIR FORCE

London Gazette, May 29, 1934

General Duties Branch

Pilot Officer on probation C. F. Newcombe is confirmed in rank (March 24); Pilot Officer P. S. Gomez is placed on the half-pay list, scale A (May 29); Flight Lt. A. T. S. Leguen de Lacroix is placed on the retired list (May 27).

Stores Branch

Flight Lt. T. H. Jolley is placed on the retired list (May 25).

Medical Branch

Flight Lt. A. A. Townsend, M.B., B.Ch., is promoted to the rank of Squadron Ldr. (May 27).

ROYAL AIR FORCE RESERVE

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The follg. are granted commissions as Pilot Officers on probation in class AA(i) (May 29):—E. L. Gosling, L. G. O. Hutchison, H. P. McClean.

Flying Officer L. Rimmer, M.M., is transferred from class A to class C (May 29).

The follg. Flying Officers relinquish their commissions on completion of service:—D. P. Jones (April 27); E. G. Curtice (May 9).

London Gazette, June 1, 1934

The follg. promotions are made with effect from June 1:—

Flight Lts. to be Squadron Ldrs.—J. R. I. Scambler, A.F.C., F. J. Fogarty, D.F.C., E. P. Mackay, W. H. Poole, A.F.C., M.M., J. C. Foden, A.F.C., J. Bussey.

Flying Officers to be Flight Lts.—W. R. Baird, H. D. McGregor, T. W. G. Eady, C. V. Howes, G. F. Overbury, G. K. Tulloch, G. E. Sampson, H. M. Pearson, E. A. Jones, W. H. Hutton, H. H. Leech, J. E. Allen, E. D. Elliott, W. R. Hartwright, W. P. J. Thompson, F. W. Murison, R. B. Councell, J. A. C. Stratton, L. F. Sinclair, C. V. J. Pratt, J. G. Llewelyn, P. G. Thomson, M. V. Delap, A. G. Adnams, R. Chadwick, R. S. Darbyshire, D. H. F. Barnett, A. C. Mitchell, E. C. Passmore, F. C. Sturgiss.

Stores Branch

The follg. promotions are made with effect from June 1:—

Flight Lt. to be Squadron Ldr.—C. H. Masters.

Flying Officers to be Flight Lts.—C. I. Fry, R. B. Brown, H. M. S. Dawes.

Medical Branch

The follg. Flying Officers are promoted to the rank of Flight Lt. with effect from May 29, and with seny. of May 1:—T. C. Macdonald, M.B., Ch.B., J. S. Carslaw, M.B., Ch.B.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commanders.—A. D. Pryor, to Station Headquarters, Upavon, 15.5.34, to command vice W/Cdr. G. S. M. Insall, V.C., M.C. G. E. Livock, D.F.C., A.F.C., to No. 209 (F.B.) Squadron, Mount Batten, 17.5.34, to command, vice S/Ldr. J. H. O. Jones.

Squadron Leader J. H. O. Jones, to No. 202 (F.B.) Squadron, Malta, 17.5.34, to command, vice S/Ldr. A. H. Wann.

Flight Lieutenants.—O. I. Gilson, to H.M.S. *Furious*, 22.5.34. W. A. Tattersall, to R.A.F. Depot, Middle East, Aboukir, 4.5.34. J. F. Griffiths, to Station Headquarters, Donibristle, 26.5.34. R. D. Starley, M.C., to D.D.R.M., Dept. of A.M.S.R., Air Ministry, 29.5.34.

Flying Officers: T. N. Coslett, to R.A.F. Base, Leuchars, 24.5.34. R. L. Wallace, to Central Flying School, Wittering, 23.5.34. N. W. A. Cullum, to No. 811 (F.T.B.) Squadron, 19.5.34. W. R. Sadler, to Station Flight, Duxford, 24.5.34. H. W. A. Chesterman, to No. 27 (B) Squadron, Kohat, India, 6.5.34. G. K. Fairtlough, to No. 5 Flying Training School, Sealand, 30.5.34. R. C. Reynell, to No. 1 (F) Squadron, Tangmere, 19.5.34.

Pilot Officers: T. R. Vickers, to No. 99 (B) Squadron, Upper Heyford, 16.5.34, on appointment to a short service commission. J. R. MacLachlan, to No. 3 Flying Training School, Grantham, 26.5.34, on appointment to a permanent commission.

Acting Pilot Officers: W. E. Legard, to No. 4 Flying Training School, Abu Sueir, Egypt, 26.5.34. E. W. Owens Thurston, to No. 5 Flying Training School, Sealand, 30.5.34.

Stores Branch

Flight Lieutenants: N. W. Law, to H.M.S. *Furious*, 25.5.34. D. A. W. Sugden, to R.A.F. Base, Malta, 25.5.34.

Accountant Branch

Group Captain H. J. Down, to Headquarters, Inland Area, Stanmore, 1.6.34, for duty as Command Accountant, vice W/Cdr. J. Rylands.

Wing Commander T. H. Evans, to Headquarters, R.A.F., Middle East, Cairo, 26.5.34, for duty as Command Accountant, vice W/Cdr. A. G. N. Belfield, O.B.E.

Flying Officers: H. D. Connor, to School of Naval Co-operation, Lee-on-the-Solent, 24.5.34. R. Cassels, to Station Headquarters, Pembroke Dock, 20.5.34. G. E. Shirley, to No. 16 (A.C.) Squadron, Old Sarum, 1.6.34.

Medical Branch

Group Captain F. N. B. Smartt, to Headquarters, R.A.F., Cranwell, 31.5.34, for duty as Principal Medical Officer, vice W/Cdr. H. B. Porteous.

Squadron Leader C. T. O'Neill, O.B.E., to R.A.F. Hospital, Cranwell, 31.5.34, for duty as Medical Officer.

Flying Officer I. Mackay, to Station Headquarters, Biggin Hill, 22.5.34, for duty at Weston Zoyland.

Chaplains Branch

Rev. A. G. Kayll, to Headquarters, British Forces in Iraq, 19.5.34, for duty as Chaplain (C. of E.), vice Rev. R. D. Grange-Bennett.

CHANGES IN THE HIGHER COMMAND

IMPORTANT changes in the Higher Commands of the Royal Air Force are announced by the Air Ministry. The appointments are as follows:—

Air Vice-Marshal A. M. Longmore, C.B., D.S.O., now Air Officer Commanding, Inland Area, Royal Air Force, to be Air Officer Commanding, Coastal Area, Royal Air Force, at the end of September, 1934, *vice* Air Marshal R. H. Clarke-Hall, C.M.G., D.S.O.

Air Vice-Marshal C. S. Burnett, C.B., C.B.E., D.S.O., now Air Officer Commanding, British Forces in Iraq, to be Air Officer Commanding, Inland Area, Royal Air Force, about March, 1935, *vice* Air Vice-Marshal A. M. Longmore, C.B., D.S.O.

Air Vice-Marshal W. G. S. Mitchell, C.B.E., D.S.O., M.C., A.F.C., now Air Officer Commanding, Royal Air Force, Cranwell, and Commandant of the Royal Air Force College, to be Air Officer Commanding, British Forces in Iraq, about February, 1935, *vice* Air Vice-Marshal C. S. Burnett, C.B., C.B.E., D.S.O.

Air Commodore H. M. Cave-Brown-Cave, D.S.O., D.F.C., now Director of Technical Development at the Air Ministry, to be Air Officer Commanding, Royal Air Force, Cranwell, and Commandant of the Royal Air Force College, about December, 1934, *vice* Air Vice-Marshal W. G. S. Mitchell, C.B.E., D.S.O., M.C., A.F.C.

Air Commodore R. H. Verney, O.B.E., now commanding Electrical and Wireless School, Royal Air Force, Cranwell, to be Director of Technical Development at the Air Ministry, about September, 1934, *vice* Air Commodore H. M. Cave-Brown-Cave, D.S.O., D.F.C.

Air Commodore J. T. Babington, D.S.O., now serving in the Directorate of Operations and Intelligence, Air Ministry, to be Air Officer Commanding, Royal Air Force, Halton, about September, 1934, *vice* Air Vice-Marshal N. D. K. MacEwen, C.M.G., D.S.O.

Air Vice-Marshall A. M. Longmore was commissioned as a Sub-Lieutenant in the Royal Navy in 1904, and joined the Naval Wing of the Royal Flying Corps as a Squadron Commander in 1912. During the war he served with the Royal Navy and the Royal Naval Air Service in France from 1914-16, and after six months' reversion to sea service he rejoined the Royal Naval Air Service. After the war he proceeded to Bulgaria as President of the Inter-Allied Aeronautical Commission of Control, and in 1925 he was appointed Director of Equipment at the Air Ministry; he was then posted to Headquarters, Inland Area, as Chief Staff Officer. In 1929 he became Air Officer Commanding, Royal Air Force, Cranwell, and Commandant of the Royal Air Force College. He was promoted to his present rank in January, 1930, and, since February, 1933, he has been Air Officer Commanding, Inland Area.

For his services during the war he was awarded the D.S.O., and was mentioned in despatches, besides having several foreign orders bestowed upon him. He was appointed C.B. in the New Year's Honours List of 1925.

Air Vice-Marshal C. S. Burnett entered the Army as 2nd Lieutenant, Highland Light Infantry, in 1901, and after having taken part in two campaigns resigned his commission in August, 1909. He joined the Royal Flying Corps at the outbreak of war in August, 1914.

During the Great War he commanded a squadron and wing in France and Palestine, and for these services was awarded the D.S.O. and C.B.E. in addition to being mentioned in despatches on four occasions.

Subsequently he commanded No. 31 Wing, Royal Air Force, Mesopotamia, and in 1923 was appointed Deputy Director of Operations and Intelligence, Air Ministry, which post he held until assuming command of the Central Flying School in January, 1927. In the New Year Honours List of the same year he was made a C.B., and, on promotion to the rank of Air Commodore in January, 1929, was appointed Chief Staff Officer, Iraq Command, which appointment he held until January, 1931, when he became Director of Operations and Intelligence, Air Ministry, and Deputy Chief of the Air Staff. He was promoted to the rank of Air Vice-Marshal in July, 1931, and became Air Officer Commanding, Iraq Command, in November, 1932.

Air Vice-Marshal W. G. S. Mitchell entered the Army in 1906 as a 2nd Lieutenant, serving with the Devons and Highland Light Infantry. He was seconded to the Royal Flying Corps in December, 1913, and he served in France from August, 1914, with short intervals until June, 1918. In December, 1919, he was posted to India, and on his return commanded the School of Technical Training, Halton, from January, 1925, to February, 1928. He then proceeded overseas to take charge of the Aden Command, which post he relinquished on appointment as Director of Training at the Air Ministry. In January, 1933, he was appointed Air Officer Commanding, Cranwell, and Commandant of the Royal Air Force College, and was promoted to his present rank in July, 1933.

For his services during the war he was awarded the D.S.O., M.C., and the A.F.C., and was mentioned in despatches on four occasions. He also received the award of C.B.E. in 1924 for valuable services rendered in the field in connection with military operations in Waziristan, 1922-23.

Air Commodore H. M. Cave-Browne-Cave joined the Royal Flying Corps (Naval Wing) from the Royal Navy in April, 1914. During the war he served with the Royal Naval Air Service and Royal Air Force, and, in addition to other appointments, commanded the Seaplane Stations at Dunkirk and Malta. For his war services he was awarded the D.S.O. and the D.F.C.

After the war, Air Commodore Cave-Browne-Cave served on the staff of the School of Technical Training (Apprentices), Royal Air Force, and during 1922-7 held, in turn, the posts of Deputy-Director of Design, and Deputy-Director of Technical Development at the Air Ministry.

He was in command of the Far East Flight which left England in October, 1927, for Singapore, and afterwards flew from Singapore round Australia back to Singapore and from Singapore to Hong Kong and back—a total distance of more than 27,000 statute miles. On the formation of the Far East Command, with Headquarters at Singapore, he was appointed Commanding Officer. In April, 1931, he was posted to the Air Ministry as Director of Technical Development, and was promoted to his present rank in July of the same year.

Air Commodore R. H. Verney was appointed 2nd Lt., 4th Warwickshire Howitzer Battery, Royal Field Artillery (T.F.), and joined the Royal Flying Corps in March, 1914. During the Great War, after returning from France, he was employed as Chief Inspector of Engines.

In August, 1919, he was granted a permanent commission as Sqd. Ldr. in the Royal Air Force, and was promoted Wing Com. in 1922 and Group Capt. in 1930. He was appointed in command of the Electrical and Wireless School, Royal Air Force, in February, 1931, and gained promotion to his present rank in July, 1933.

For his services during the Great War he was awarded the O.B.E., and was mentioned in despatches.

Air Commodore J. T. Babington was attached as a Sub-Lt. from the Royal Navy to the Naval Wing of the Royal Flying Corps in March, 1913. During the Great War he served in France with the Royal Naval Air Service, and, for distinguished service in connection with the attack on Zeppelin Sheds at Friedrichshafen on November 21, 1914, he was awarded the D.S.O.; in addition, he was mentioned in despatches and had two French decorations bestowed upon him.

In August, 1919, he was granted a permanent commission in the Royal Air Force as Sqd. Ldr., and in 1927 was appointed to command the Royal Air Force Base, Gosport. On November 11, 1929, he was appointed Air Representative to the League of Nations, and has since been promoted to Group Capt. in 1930, and to his present rank in January last.

A.A.F., HENDON "AT HOME"

IN the glorious afternoon of Sunday last, the Squadrons of the A.A.F. stationed at Hendon were "At Home" to friends. Two of these squadrons, No. 600 (City of London) (Bomber) Squadron and No. 601 (County of London) (Bomber) Squadron, both of which are equipped with Hawker "Harts" ("Kestrel"), performed some splendid formation flying in co-operation with No. 18 (Bomber) Squadron and No. 57 (Bomber) Squadron, both of which are also equipped with "Harts." This was in the nature of a dress rehearsal of an event on the programme of the R.A.F. Display. No. 604 (County of Middlesex) (Bomber) Squadron, using Westland "Wapitis" ("Jupiters"), also gave a commendable exhibition. During the afternoon, F/O. G. R. A. Elsmie, in a "Hart," and Flt. Lt. F. W. Long, who was in the last "Schneider" team, in a "Bulldog," gave aerobatic displays.

THE HENDON "AT HOME": Hawker "Harts" ("Kestrel") of No. 601 (County of London) (Bomber) Squadron, A.A.F., lined up at Hendon for the "At Home" held there last Sunday. (FLIGHT *Photo.*)

AIR POST STAMPS

By DOUGLAS ARMSTRONG

(Editor of "Stamp Collecting")

NEW ITEMS: A cover received by "FLIGHT," from Kirkwall, Orkney, per the new Official Inland Air Mail. Inset, two designs for the new Costa Rica issues, depicting the San Jose aerodrome (on all values from 5 to 75 centimos), and "Aeriel" bearing the Caduceus of Mercury (on the 1 to 10 Colones values).

"Apex" Impressions

THE impression one brought away from the great International Air Post Exhibition held in London last month was that, whereas the American competitors carried off some of the principal awards by sheer weight of monetary value, the British exhibitors scored chiefly on the historical and human interest side and by superior arrangement and annotation. The Grand Trophy went deservedly to the truly magnificent array of air post stamps of the world in mint blocks of four and upwards, including even that eclectic rarity, the 24 cent U.S.A. with "inverted centre," a £5,000 item alone. It has been stated that this one collection was insured for £178,000, so that it is impossible even to hazard a guess at the total value of the American entries. Another exhibitor from across the Pond, Mrs. Prentice Cromwell, of New York, who was awarded a gold medal only, showed a mint block of four of the "De Pinedo" stamp of Newfoundland, worth itself little less than £2,000. Remarkable as much for its artistic display as for its comprehensiveness, the collection of mint air post stamps shown by Dr. Philip G. Cole, of New York, secured the Grand Gold Medal in the Championship Class. From the standpoint of originality and aerial record, the collection of flown covers illustrating the rise and development of the air post service throughout the world from 1911 to date, with which Miss W. Penn Gaskell won the Ladies' Trophy, was unquestionably the outstanding feature of the entire exhibition, with Mr. P. H. Oakey's entry a very close second. America was again to the fore in the Junior Class, in which the trophy presented by the Junior Philatelic Society, London, fell to a budding aero-philatelist of sixteen, Master P. H. B. Freylinghuysen, of Morristown, N.Y., for an extraordinarily complete and valued display of unused official air mail stamps of all nations, in single copies, wherein most of the great rarities such as the "Hawker," "De Pinedo," "Ross Smith," 24-c. U.S.A. error, etc., were represented. As a manifestation of the wordwide interest taken in the comparatively modern pursuit of air post collecting, the "Apex" must be written down a signal success.

British Inland Air Mails

The inauguration of an official air mail service between Inverness and Kirkwall, in the Orkneys, marks another stage in the development of British inland air mails, and there seems to be little doubt that before long a number of other services will be in operation in the United Kingdom. Wide-awake air post collectors will follow these activities with close attention, and already they have given a strong fillip to the study and collecting of air mail souvenirs of our own country. The story of the early experiments in the carriage of mails by air in Great Britain and the British Empire generally is the subject of two newly-published brochures, one dealing with the "Coronation Aerial Post, 1911," by Francis J. Field, Ltd., and the other on "Pioneer Air Posts of the Empire," by A. T. Waters (published by Stamp Collecting, Ltd.).

In connection with the inaugural flight over the Inverness-Kirkwall line, on May 29, a souvenir "sticker" was provided by the concessionaires, Highland Airways, Ltd., in a special design which was attached to "first flight" covers on payment of a supplementary fee of 2s. This took the place of a distinctive air mail vignette for which sanction could not be obtained from the P.M.G., but the actual postage was denoted by an ordinary 1½d. postage stamp, and letters bore no special cachets or other markings indicating that they were despatched "by air."

Japanese Air Mail Souvenir

In connection with a postal exhibition held at Tokio on the sixty-third anniversary of the reorganisation of the Japanese postal system, an attractive souvenir was provided in the form of a complete set of current air mail stamps of Japan, printed together in a miniature sheet with large margins carrying appropriate inscriptions in native syllabics. The issue was a limited one and, despite the fact that no more than three sets could be purchased by any one applicant, the entire supply was sold out on the first day, April 20, 1934.

Costa Rica's New Air Stamps

We illustrate the designs of the new Government air post stamps from Costa Rica, that showing a view of the aviation field at San Jose, the capital, appearing on all values from 5 to 75 centimos (both ordinary and official) and the other representing (apparently) Aerial bearing the Caduceus of Mercury only upon the higher denominations, ranging from 1 to 10 Colones.

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PUBLICATIONS RECEIVED

Aeronautical Research Committee Reports and Memoranda No. 1570. *Comparative Engine Tests with Petrol and Butane.* By P. H. Stokes and F. G. Code Holland. July, 1933. Price 4*s.* 0*d.* net. No. 1578. *Model Spinning Tests of an Interceptor Fighter.* By A. V. Stephens and R. H. Francis. October, 1933. Price 1*s.* 0*d.* net. No. 1579. *Continuous Rotation Balance for Measurement of Yawing and Rolling Moments in a Spin.* By P. H. Allwork. November, 1933. Price 9*d.* net. London: H.M. Stationery Office, W.C.2.

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NEW COMPANIES REGISTERED

PETROL FEEDS, LTD., Aston Lane, Aston, Birmingham. Capital, £2,500 in £1 shares (2,000 "A" and 500 "B"). To adopt an agreement, with Francis J. S. Jones for the acquisition of certain Letters Patent and applications for Letters Patent relating to inventions connected with the liquid fuel supply arrangements of internal combustion engines and to manufacture and exploit the same, &c. The subscribers (each with one share) are H. R. Bettinson, 11 and 12, Bennett's Hill, Birmingham, solicitor. Geo. M. Butts, 11 and 12 Bennett's Hill, Birmingham, solicitor. The first directors are to be appointed by the subscribers. Solicitors: Forsyth, Bettinson and Co., 11 and 12, Bennett's Hill, Birmingham.

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PATENT AERONAUTICAL SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors
(The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1932

Published June 7, 1934

25,936. FAIREY AVIATION CO., LTD., and A. G. FORSYTH. Cooling systems for internal-combustion engines. (410,199.)

28,290. BENDIX AVIATION CORPORATION. Clutch-control mechanism. (410,158.)

31,538. BRITISH THOMSON-HOUSTON CO., LTD., H. W. H. WARREN and R. NEWBOUND. Screw-propellers and methods of manufacturing them. (410,100.)

31,921. BENDIX AVIATION CORPORATION. Method and means for operating and controlling internal-combustion engines. (410,139.)

35,447. A. H. STEVENS (Sperry Gyroscope Co. Inc.). Apparatus for obtaining the sound-lag correction for a sound locator for locating aircraft. (410,239.)

APPLIED FOR IN 1933

Published June 7, 1934

1,972. J. W. WOOD, JUN. Air port constructions. (410,265.)

21,963. S. SWITLIK. Parachute pack and chair. (410,361.)

25,294. BRITISH THOMSON-HOUSTON CO. LTD. Elastic fluid turbine drives, particularly for aircraft. (410,387.)

29,090. J. MARTIN. Aeroplane wings and/or tail sections. (410,405.)